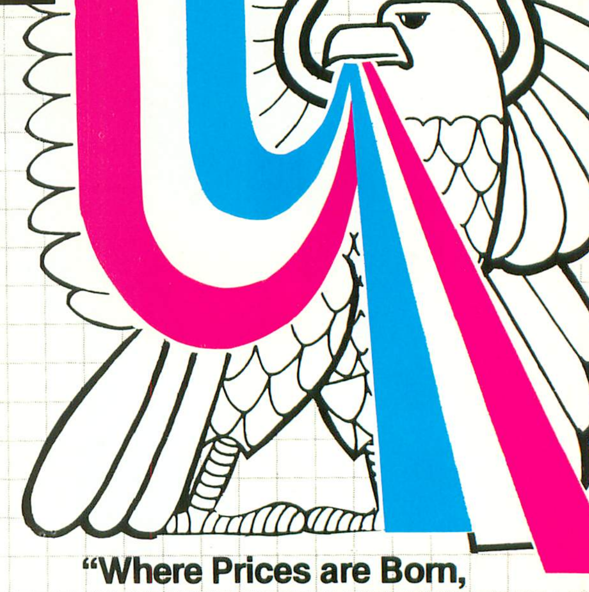

ST NEWS
PRODUCTS
PROGRAMS
HELP
Page 59
U.S.A. $3.50
CANADA $4.50
Antic®
The ATARI® Resource
MARCH 1987 VOLUME 5, NUMBER 11
Inside Today's Atari Corp.
Close-up look at new product development
Calculate your paychecks
Learn speedy Dvorak Typing
Win Word Contests
Reviews:
Seikosha SP-1000A Printer,
Kyan Pascal,
Hippo Sound Digitizer,
Starglider
Inside: 10 Type-In Programs
(Including 2 ST Programs)

WHITEHOUSE COMPUTER

P.O. Box 4025 Williamsport, PA 17701



ORDER TOLL FREE 1-800-351-3442

VISA 4%, MASTER CARD 4%, AMERICAN EXPRESS 5%

CUSTOMER SERVICE AND PA RESIDENTS CALL 1-717-322-7700

"Where Prices are Born, Not Raised."

Hours: Monday-Friday 9 a.m.-8 p.m. Saturday 9-12 p.m.

COMPUTERS

800XL	$79
65XE	89
130XE	127
520ST (MONO)	CALL
520ST (RGB)	CALL
1040 ST	CALL

MONITORS

AMDEK	
300G	$117
300A	127
310A	145
Color 600	395
Color 700	494
Color 710	568
ATARI	
SM124	$169
SC1224	325
NEC	
1201	$139
1205	89
1260	79
TAXAN	
220 Color/Green/14"	$179
THOMSON	
CM365 RGB/Color/Green With Cables	$269
TEKNIKA	
MJ-10	$159
MJ-22	254
SAKATA	
SC-100	$140
ZENITH	
ZVM 1220	$95
ZVM 1230	95
BLUE CHIP	
Green	$89.00
Amber	93.00
Color/RGB	279.00

PAPER

WHITE 20 LB LAZOR EDGE	
2500 Sheets	$26
1000 Sheets	16
500 Sheets	11
ASSORTED PASTELS LAZOR EDGE	
2500 Sheets	$44
1000 Sheets	26
500 Sheets	16
1000 Mailing Labels	9

PRINTERS

CITIZEN	
MSP-10	$267
MSP-15	367
MSP-20	354
MSP-25	527
120D	194
STAR MICRONICS	
NX-10	CALL
Gemini II	CALL
SG-15	$366
SD-15	440
SR-10	469
SR-15	580
SB-10	588
SG-10C	230
Powertype	295
LEGEND	
808	$154
1080	205
1380	259
1385	295
OKIDATA	
Okimate 10	$171
Okimate 20	211
182	214
192	348
U-93	389
PANASONIC	
1080	$209
1091	231
1592	459
1595	CALL
3131	259
3151	408
SEIKOSHA	
SP 1000	$188 100CPS/NLQ
MP1300AI	525 300 CPS/NLQ

EPSON

Call for current pricing on all Epson models

PRINTER RIBBONS AND DUST COVERS AVAILABLE

DISK DRIVES

1050	$127
Happy 1050	275
Happy Enhancer	129
Duplicator	129
Indus GT	194
SF314	215
SF354	149
Astra	CALL
US Doubler	49

MODEMS

XMM 301	$39
MPP 1000E	39
MPP 1200AT	159
MPP 1200ST	149
Team Modem	145
Avatex 1200	95
Avatex1200HC 100% Hayes	143
Packard/Bell 1200	199
Compuserve	21
U-Call	36

INTERFACES

MPP 1150	$45
U-Print/Port	40
U-Print 16K	69
U-Print 64K	85
PR Connection	63
PR Modem Cable	11
PR Printer Cable	11
Xetec	39
U-Print 1200XLP	49
520 ST/IBM Cables 6 ft.	11
Micro Stuffer	69

DISKETTES

3½ FUJI	
SS/DD	$17
DS/DD	24
NASHUA	
SS/DD	$21
DS/DD	26
5¼ FUJI	
SS/DD	$11
DS/DD	14
ELEPHANT	
SS/DD	$12
DS/DD	14
Disk Notchers	$4
Disk Banks	
Allsop	CALL
Innovative Concepts	CALL

SOFTWARE

BATTERIES INCLUDED	
Paperclip	$36
Paperclip/Spell	CALL
Spell Pack	CALL
Home Pak	31
BRODERBUND	
Karateka	$18
Lode Runner	18
Print Shop	27
Graphic Libraries I, II, & III	15
Print Shop Companion	25
SYNAPSE	
Synfile	$30
Syncalc	30
Syncalc Templates	14
MICROPROSE	
F-15 Strike Eagle	$21
Silent Service	21
Kennedy Approach	21
Crusade In Europe	21
Conflict In Nam	24
Gun Ship	24
OSS	
Mac 65	$48
Action	48
Basic XL	38
Basic XE	48
Tool Kits	18
SUBLOGIC	
Flight Simulator II	$31
Night Mission Pinball	21
Jet	CALL
XLENT	
Mega font	$19
Page Designer	21
Rubber Stamp	23
Typesetter	23
ICD	
Rambo XL	$36
US Doubler	49
ATARI	
Visicalc	$14
Atariwriter	21
Atariwriter +	32
Learning Phone	26
ORIGIN	
Ultima 3	$33
Ultima 4	38
SSI	
Nam	$25
Six Gun Shootout	25
War In Russia	49

520 ST SOFTWARE

BATTERIES INCLUDED	
Degas	$25
HomePak	CALL
Paperclip Elite	CALL
I*S Talk	CALL
I*S Time + Billing	CALL
FIREBIRD	
The Pawn	$27
OASIS SYSTEMS	
Sun Dog	$25
HABA	
Habawriter	$32
Checkminder	39
Habaview	39
HIPPOPATAMUS	
Hippo Spell	$26
Hippo Simple	26
Hippo Word	26
Almanac	22
Backgammon	24
MARK OF THE UNICORN	
Hex	$25
PC Intercom	65
Final Word	94
MICROPROSE	
Silent Service	$25
SUBLOGIC	
Flight Simulator	CALL
Jet	CALL
VIP	
VIP Professional	$99
VIP Professional Lite	65
XLENT	
Rubber Stamp	$33
Typesetter	26
OSS	
Personal Prolog	CALL
Personal Pascal	CALL
Personal Disk Kit	CALL
PHILON	
Fast Basic-M	CALL

Ordering and Terms

Place orders Mon-Fri 9am-8pm, Sat. 9-12 pm. Customer service calls taken Mon.-Fri. 10am-4pm. No deposit on C.O.D. orders. Free freight on all prepaid cash orders over $300 in the continental U.S.A. APO andFPO orders add $5 per hundred. Priority mail add $10 per hundred. All foreign orders add 8% for shipping. UPS shipping add $4 per hundred Eas Coast, $5 per hundred West Coast. PA residents add 6% sales tax. Free shipping for PA residents. Orders by company and personal checks held 3 weeks. Defective products require prior return authorization. Defective products will be replaced or repaired according to warranty. **No used or reconditioned products sold.** Prices and availability are subject to change without notice. No cash refunds.

CIRCLE 074 ON READER SERVICE CARD

THESE TWO WARGAMES CAN KEEP YOU HAPPY.

On diskette for 48K ATARI® 8-bit Home Computers and COMMODORE 64/128™.
$29.95

On diskette for 48K APPLE® II Series, ATARI (8-bit) and C-64/128. **$59.95**

FOREVER.

Forever is a *long* time. And that's about how long these two extraordinary wargames can keep you entertained. How? By letting you create an infinite number of scenarios, they literally provide you with an endless supply of different games.

WARGAME CONSTRUCTION SET™ allows you to design your own wargames, draw your own battlemaps, and create soldiers and scenarios that are limited only by your imagination. You can choose four levels of scale, from tactical man-to-man combat to large-scale strategic campaigns. Endow your fighting men and machines with such attributes as unit type, weapon type and firepower, movement and strength points.

This refreshingly different game gives you the unique opportunity to create battles from *any* period in military history, from Ancient wars with spears and catapults to modern conflicts using advanced missiles and tanks. You can also engage in sword-and-sorcery fantasy adventures or fight science-fiction battles.

If you don't want to make up your own scenarios, we've provided eight ready-to-play games (five solitaire, three 2-player). And even these can be modified if you want!

WARSHIP™ is the ultimate tactical game of naval surface combat in the Pacific, from 1941 to 1945. You can re-enact actual battles using real ships fighting under historical conditions, or create an unlimited number of hypothetical surface battles by modifying ship data and drawing your own maps.

Choose from 79 classes of warships from the Allied and Japanese fleet of battleships, cruisers, destroyers and transports. Each ship comes historically rated for a host of specifications, all of which can be altered to suit your liking.

Whether you play the scenarios we've provided or create your own, you are guaranteed the "feel" of real battle. You set the course and speed, fire torpedoes and select targets for individual ships or for a whole division.

During combat, the computer keeps track of *every* single shell hit! It calculates damage based on such variables as armor strength, location of hit, and penetration ability of each shell. Collisions, flooding, fire, and damage to the bridge, rudder, engines, radar and electrical systems are all part of this incredibly detailed simulation.

We can go on and on about the flexibility, features and challenges these exciting games have to offer. But when we said "forever" in the headline, we meant playing, not reading! To find the closest thing to eternal happiness in wargaming, check out these two games at your local computer/software or game store today!

If there are no convenient stores near you, VISA and MasterCard holders can order by calling *toll-free* **800-443-010, x335.** To order by mail, send your check to: Strategic Simulations, Inc., 1046 N. Rengstorff Ave., Mountain View, CA 94043. Be sure to specify the computer format of the game. California residents, please add applicable sales tax.

Add $2.00 to your order for shipping and handling. Allow 4-6 weeks for delivery. In the Continental U.S., U.P.S. Blue service (faster shipping time) is available for $4.00.

Apple, Atari and C-64/128 are trademarks of Apple Computer, Inc., Atari, Inc., and Commodore Electronics, Ltd., respectively.



CIRCLE 046 ON READER SERVICE CARD



LYCO COMPUTER

MARKETING & CONSULTANTS INC.

WE CARRY THE BEST PRINTERS AT THE BEST PRICES!

Panasonic® Industrial Company

2 YEAR WARRANTY



1080 i

- ★ 120 cps Draft Mode
- ★ 24 cps NLQ
- ★ Word Process
- ★ Friction Feed

$199.00

EPSON®



Number one. And built like it.

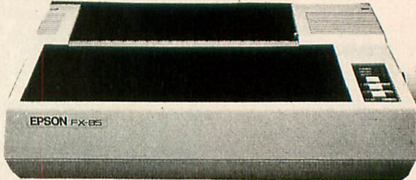


FX-85

- ★ 80 column
- ★ 160 cps Draft Mode
- ★ SelecType

$355.00

WARRANTY
- Epson's one year warranty.



ATARI HARDWARE

SF 314	$219.95
SF 354	$175.95
1050 Drive (XE, XL, series)	$129.95
SHD 204 20 MEG	$655.95
65XE	$CALL
520 ST mono	$CALL

Supra 300 AT Modem

$32.95

- Works on Atari 400, 800, XL, and XE Computers
- Auto Answer/Auto Dial
- Direct Connect to Phone Line
- Includes AC adapter/ Power Supply
- 90 Day Warranty
- Connects Directly to Computer

DISKETTES

MAXELL	5¼	3.5
SSDD	9.99	16.99
DSDD	12.99	23.99
BONUS		
SSDD	6.99	—
DSDD	7.50	—
SKC		
SSDD	8.50	14.99
DSDD	9.50	19.99
DSHD 96TP1	19.50	—

DUST COVERS

ATARI

520 ST	11.95
130 XE	6.99
65 XE	6.99
1050	6.99

ATARI® *520 ST COLOR SYSTEM!*

- ★ 520 KEYBOARD
- ★ SF-354 DISK DRIVE
- ★ SC-1224 COLOR MONITOR

OWN TOTAL PERFORMANCE...

FULL MANUFACTURER'S WARRANTY APPLIES.

(Monochrome Monitor Systems Available.)



$775.00

TOLL FREE 1-800-233-8760

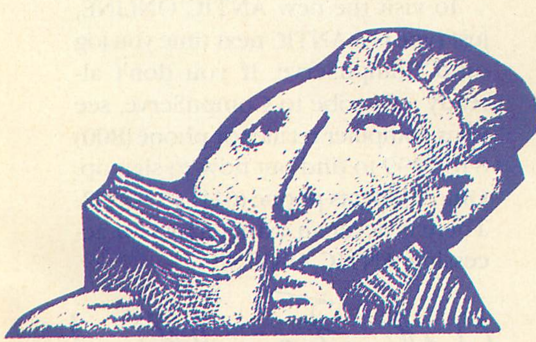




MARCH 1987, VOLUME 5, NUMBER 11







FEATURES

DEPARTMENTS

SOFTWARE LIBRARY

ST RESOURCE

Antic—The Atari Resource is published twelve times per year by Antic Publishing. Editorial offices are located 544 Second Street, San Francisco, CA 94107. ISSN 0745-2527. Second Class Postage paid at San Francisco, California and additional mailing offices. POSTMASTER: Send address change to **Antic**, P.O. Box 1919, Marion, OH 43306.



Publisher
James Capparell
Editorial
DeWitt Robbeloth, Executive Editor; Nat Friedland, Editor; Charles Jackson, Technical and Online Editor; Patrick Bass, ST Program Editor; Gregg Pearlman, Assistant Editor; Heidi Brumbaugh, Editorial Assistant; Bill Marquardt, Technical Assistant. ST Resource: Jon Bell, Editor; Patrick Bass, Technical Editor.
Contributing Editors
Ian Chadwick, David Plotkin, David Small.
Art
Claudia Steenberg-Majewski, Art Director; Gregory Silva, Assistant Art Director; Jim Warner, Design/Production Assistant; Katherine Murphy, Ad Production Coordinator; Julianne Ososke, Collateral Printing Coordinator; Denis Morella, Steve Campbell, John Pappas, Mary Rhomberg Lavery, Contributing Artists; Terrific Graphics, Typesetting.
Cover photography: Pat Johnson
Circulation
Margot Olmstead, Manager; Dixie Nicholas, Subscription Coordinator; Eric Gupton, Distribution Coordinator; Daniel Barrett, Ken Warner, Dealer Sales.
Administration
John Cady, Controller; Buddy Weisman, Office Manager; Lorene Kaatz, Credit & Collections; Tom Chandler, Fidez Bituin, A/R; Lydia Chee, A/P; Lawrence Sumpter, Retail Order Processing; Budiman Goutama, Cecilia Calara, Catalog Order Processing; Griselda Lopez, C/R; May Lai, P/R; Aurora Mahoney, Sec.; Susan Allison, Administrative Secretary; Tina Latham, Receptionist.
Marketing
Jon Loveless, Vice President; Gary Yost, Director; Jack Powell, Product Development Manager; Lisa Wehrer, Consumer Service Manager; Brian Sarrazin, Sales Manager; Pamela Grady, Customer Service Coordinator; Scot Tumlin, Technical Support; Dennis Swan, Fulfillment Coordinator.
Advertising Sales
John Taggart, Director
(For Area Sales Representatives, see page 84.)

General Offices
& Catalog Customer Service
(415) 957-0886
Antic, 544 Second Street
San Francisco, CA 94107
Subscription Customer Service
(614) 383-3141
Antic, P.O. Box 1919, Marion, OH 43306
Credit Card Subscriptions & Catalog Orders
(800) 443-0100 ext. 133
(Continental U.S. & Hawaii)

March 1987, Volume 5, Number 11

Subscriptions: One year (12 issues) $28. Canada and Mexico add $8, other foreign add $12. Action Edition (12 issues with disks) $99.95, all foreign add $25. (California residents add 6½% sales tax for disk subscriptions.

Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

Editorial

Many of you sent us letters or electronic mail wondering why we haven't said much lately about ANTIC ONLINE—or added much to our CompuServe edition either.

Well, we missed you at least as much as you missed us. We enjoy providing the fastest and most in-depth Atari news to thousands of users each month on ANTIC ONLINE. But although we felt bad about the temporary slowdown, all of us here are happy that contract negotiations have been concluded to everyone's satisfaction.

More important, we're sure that *you* will also be happy with the vastly expanded but streamlined new ANTIC ONLINE, which now becomes the first online magazine to offer these important new features we *couldn't* bring you before:

• SOFTWARE ONLINE—Every month there will be new 8-bit and ST programs you can download, without any extra charge. These will showcase the best programs from **Antic's** five years of publication. And as we replace programs each month, the previous titles will be transferred to the SIG*Atari data libraries and remain accessible online.

• PICTURE GALLERY—New RLE (Run Length Encoding) high resolution graphics will be available each month for downloading or online viewing. ANTIC ONLINE will even be able to display pictures accompanying news stories. You'll *read* about a product or convention and then *see* it onscreen. You can submit your own best ST or 8-bit RLE pictures too.

• SUBSCRIPTIONS ONLINE—Now you can place your subscription orders online for Antic Publishing magazines and later be billed directly.

ALL-NEW MENUS

During our hiatus, **Antic** literally spent months of man-hours to create a dramatically streamlined menu structure for ANTIC ONLINE. Now you can see what's new as soon as you enter ANTIC ONLINE. No more wading through pages of submenus and old files before finding out about the newest products and developments. Only the best of the old material will remain in our archives. So it won't get in your way, but it's still there if you need it.

ANTIC ONLINE is CompuServe's largest online magazine—1.5 megabytes of Atari information, and growing. We are now able to update it daily (except between Friday and Sunday) directly from **Antic**. CompuServe still does the final merge in Columbus, Ohio. But all other preparations are now done right here at **Antic**, under the responsibility of newly-named ANTIC ONLINE editor Charles Jackson. This gives **Antic** much more control than we used to have over how soon we can upload material and where it's placed.

Next month **Antic** Magazine will provide many more details about how to get around on the new ANTIC ONLINE. However, we want to assure Atari users groups that it's still okay to download *any text article* from ANTIC ONLINE and reprint it in your newsletter—if you display the **Antic** copyright and permission notice at the top of each article you reprint.

To visit the new ANTIC ONLINE, just type GO ANTIC next time you log onto CompuServe. If you don't already subscribe to CompuServe, see your computer retailer or phone (800) 848-8199 to find out how to sign up. Ohio residents phone (614) 457-0802. There is never an extra charge for accessing ANTIC ONLINE.

Nat Friedland

Nat Friedland
Editor, Antic

BREAK THROUGH!

STEREOTEK GLASSES—

true stereoscopic 3D graphics for your Atari ST.

Put on the STEREOTEK glasses and jump into a new universe. Discover a magical world that you always knew existed. That *extra* dimension—DEPTH. Now you can add depth to your computer graphics with the STEREOTEK Liquid Crystal glasses. Solid, realistic, 3D images you want to reach out and touch. STEREOTEK glasses plug into your ATARI ST cartridge port to provide absolutely realistic 3D graphics in full color or hi-res monochrome.

Your STEREOTEK depth-view system includes:

- One pair electronic Liquid Crystal Shutter glasses with four-foot cable (can be comfortably worn over eyeglasses).
- ST cartridge interface unit—supports two sets of glasses (second set optional).
- DEGAS Elite Stereo Desk Accessory.
- Stereo CAD-3D animation and stereo slide show by Tom Hudson.
- For programmers: Complete developer's instructions plus source code for adding stereo to your own programs.

STEREO TEK™ Three Dimensional Glasses

The secret to full-color stereo images on a computer screen is electronic Liquid Crystal Shutter (LCS) glasses. Two optical shutters in eyeglass frames are connected electronically to the ST. Everytime the ST screen refreshes (60hz/color, 70hz/mono), one shutter closes and the other opens. The monitor displays alternating right and left eye views synchronized with the shutters. The alternating views appear faster than the eye can see, and your brain translates the normally flat monitor image into one of startlingly realistic depth. Because of the ST's speed, RAM size and cartridge port, this advanced graphics technology is only available on the Atari ST. (One megabyte RAM recommended).

Developed by LC Technologies. Distributed by The Catalog.
LC Technologies is a venture of Tektronix of Beaverton, OR.
Dealer inquiries welcome, call (415) 957-0886

CIRCLE 051 ON READER SERVICE CARD

Want to order? Call our toll-free 800 number and ask about the STEREOTEK system and add-on STEREOTEK glasses. And find out about our growing line of stereo software, including STEREO CAD-3D 2.0, STEREO CYBERMATE, STEREO RAY TRACING, LCS WANDERER, and STEREO MAPS & LEGENDS 3.0. Our operators will be glad to help.

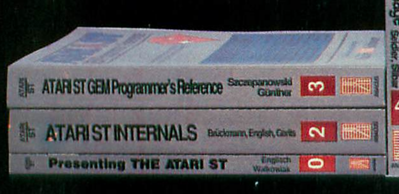
STEREOTEK SYSTEM TH9020 **$149.95**
Add-on glasses TH9021 **$99.95**

Ask for STEREOTEK at your local ST software retailer, or

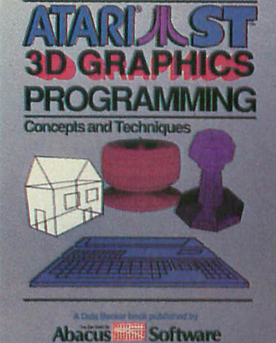
CALL 24 HOURS TOLL FREE 1-800-443-0100, ext. 133

BESTSELLERS

...from the premiere ST book publisher







What reviewers say about Abacus Books:

On ST Internals:
...will not be going any farther than arms reach from my computer...ST Applications ...the best and most useful volume out so far...can't afford not to have it.—STart, Dewitt Robbeloth

On GEM programmer's Reference:
Anyone interested in learning how to manipulate the VDI or the AES will want to have this book at their fingertips...—ST Applications, Richard Kaller
The next most important Abacus book...
—STart, Dewitt Robbeloth

ATARI ST
ST Disk Drives
NEW!
Inside and Out
A Data Becker book from Abacus Software

Presenting the Atari ST
Gives you an in-depth look at this sensational new computer. Learn about the architecture of the ST, working with GEM, the mouse, operating system, all the various interfaces, the 68000 chip and its instructions, LOGO. 180pp $16.95

ST INTERNALS
Essential guide to the inside information of the ST. Detailed descriptions of sound and graphics chips, internal hardware, I/O ports, using GEM. Commented BIOS listing. An indispensible reference for your ST library. 450pp $19.95

ST Machine Language
Program in the fastest language for your ATARI ST. Learn 68000 assembly language, its numbering system, use of registers, structure & important details of instruction set, and use of internal system routines. Geared for the ST. 280pp $19.95

ST GRAPHICS & SOUND
Detailed guide to graphics and sound on the ST. 2D & 3D function plotters, Moiré patterns, graphic memory and various resolutions, fractals, recursion, waveform generation. Examples written in C, LOGO, BASIC and Modula2. 250pp $19.95

Atari ST for Beginners
Written for the firsthand ST user. Get a basic understanding of your ST. Explore LOGO and BASIC from the ground up. Simple explanations of the hardware and internal workings of the ST. Illustrations, diagrams. Glossary. Index. 200pp $16.95

GEM Programmer's Ref.
For serious programmers needing detailed information on GEM. Presented in an easy-to-understand format. All examples in C or assembly language. Covers VDI and AES functions. No serious programmer should be without. 410pp $19.95

ST TRICKS & TIPS
Fantastic collection of programs and info for the ST. Complete programs include: super-fast RAM disk; time-saving printer spooler; color print hardcopy; plotter output hardcopy; creating accessories. Money saving tricks and tips. 260pp $19.95

ST LOGO User's Guide
Take control by learning ST LOGO—the easy to use, powerful language. Includes: file handling, recursion, Hilbert & Sierpinski curves, 2 & 3D function plots, data structure, error handling. Helpful guide for LOGO users. 375 pp $19.95

ST Disk Drives - Inside and Out
As the foremost publisher of ST books, we announce the newest volume in our continuing ST Reference Library series—***ST Disk Drives - Inside and Out.*** This book includes chapters on files, file structures and data management. Thoroughly discusses the floppy disk, the hard disk and the RAM disk both from a programming and a technical perspective. Includes several full-length utilities and programming tools that enable you to further explore to ST disk drives. Available March. 450pp $24.95

ST PEEKS & POKES
Enhance your programs with the examples found within this book. Explores using different languages BASIC, C, LOGO and machine language, using various interfaces, memory usage, explore the VDI using BASIC, more. 280pp $16.95

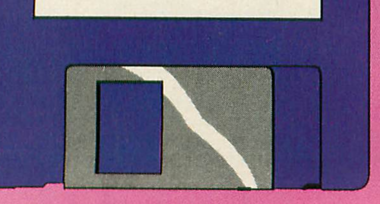
Intro to MIDI Programming
Discover the magic of MIDI! Learn MIDI programming, how to program your synthesizer, how to buy MIDI software, how to buy a synthesizer, use extended BIOS. Includes source code for ST music box auto-player from Xlent Software. 250pp $19.95

ST BASIC Training Guide
Thorough guide for learning ST BASIC. Detailed programming fundamentals, commands descriptions, ST graphics & sound, using GEM in BASIC, file management, disk operation. Tutorial problems give hands on experience. 316pp $16.95

ST BASIC to C
Move up from BASIC to C. If you're already a BASIC programmer, you can learn C all that much faster. Parallel examples demonstrate the programming techniques and constructs in both languages. Variables, pointers, arrays. 230pp $19.95

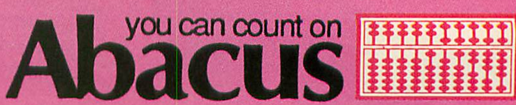
ST 3D GRAPHICS
FANTASTIC! Learn how to create fantastic and impressive 3D graphics on your Atari ST. Rotate, zoom and shade 3D objects. All programs written in machine language for high speed. Learn the mathematics behind 3D graphics. Hidden line removal, shading. With 3D pattern maker and animator. 350pp $24.95

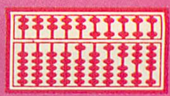
Optional program diskettes
Available for our ST book titles. The diskettes contain most of the programs found in the text of the book and saves you the time and trouble of typing them in.
Each diskette: $14.95



Call or write for your FREE CATALOG or the name of the dealer nearest you. Or you can order directly using your MC, VISA or Amex charge card. Add $4.00 per order for shipping and handling. Foreign orders add $10.00 per item. Dealers inquires welcome–over 2000 dealers nationwide.

Phone (616) 241-5510
Telex 709-101 • Fax (616) 241-5021





P.O. Box 7219 Dept. A3 Grand Rapids, MI 49510

CIRCLE 001 ON READER SERVICE CARD

MDA ATARITHON

This summer I worked on my hometown Muscular Dystrophy Association Telethon. The dealer that had previously supplied computers went out of business, so donors' names, addresses and donations had to be listed by hand. But a friend and I brought our Ataris (800XL and 600XL) and I wrote a quick program to track all this information. We had a good time and I got to show off my computer to the whole community.

Oscar Fowler
CompuServe ID
72347,1655

SHARED HARD DRIVE

Is it possible for an 8-bit Atari and an ST to share the same hard disk drive?

Lenn

BUDGET DB UPGRADE

I have an enhancement to the excellent program, *Budget dB* (**Antic**, November 1986). When listing transactions to the screen, the prompt "C to cont" gets printed at the top of the screen after the second page is listed, overwriting part of a transaction. Typing "C" at that point ends the listing. To correct this, delete POSITION N0,22 in line 445.

Jim Barnett
Gaithersburg, MD

NEEDS DEVELOPERS KIT

I am unable to locate a Resource Construction Set anywhere. Can private individuals get the Atari Developers Package? If so, how? It appears the RCS and the Atari/DRI documentation are worth the price. If not, what now?

Joel Hart

Yes, anyone may purchase the Atari De-

ULTIMA RUNES

Most of the characters in the archaic alphabet of Lord British's Ultima IV (Origins Software) can be found under "rune" in the *American College Dictionary* (Random House). Translating the ancient language on the cloth map of Ultima IV into English is a great help when moving players between cities.

As a further clue, remember that mandrake root and nightshade can be found only when both moons are dark.

Marjorie Martin
San Francisco, CA

CHROMA BOOST

The "busy" appearance of the video display background described in Jon Krah-

HAPPY COMPUTERS HAS THE SYSTEM THAT OUT PERFORMS ALL OTHERS

SUPER BACKUP & WARP SPEED FOR YOUR 810 & 1050

HAPPY DRIVE ENHANCEMENT still just $149.95

for 1050 order number HC1; for 810 order number HC8

The fully working and proven disk drive improvement package. You get: disk backup, high speed write with verify, high speed reading, plus many fantastic features that others only dream about. The 810 version operates in single density with an eighteen sector buffer. The 1050 version operates in all three Atari densities for maximum storage, and buffers up to thirty six sectors! No soldering needed, plug-in installation procedure with complete instructions included. Our WARP SPEED SOFTWARE is included at no extra charge! Over 10,000 units sold! High quality, completely assembled circuit board with gold on connector pins.

CHEERUP UPGRADE introductory price $49.95

order number DCU1

Many Atari users agree . . . the HAPPY ENHANCEMENT is superior to the DUPLICATOR. This Hardware upgrade will improve your 1050 DUPLICATOR. You will enjoy all the features that HAPPY ENHANCEMENT owners have. Back up more disks, including those with 34 sector formats; all HAPPY products do this! With HAPPY, there is no need to wait for new features and more development time. Get a fully developed and working system now! Once the CHEERUP UPGRADE is installed, you can no longer use the DUPLICATOR's "User friendly disk software." You probably won't miss it! Instead, you will use the WARP SPEED SOFTWARE package for disk backup and high speed writing and reading that really works. The CHEERUP UPGRADE includes our CHEERUP hardware module (minimal soldering required), our version 7 WARP SPEED SOFTWARE, complete with manual, all features as listed, and installation instructions. Your upgraded DUPLICATOR will be fully compatible with all HAPPY software features and DOS programs. The 1050 CONTROLLER option is NOT easily used with the upgraded DUPLICATOR. Your DUPLICATOR must be functional before our module can be installed.

NOTE: The 1050 DUPLICATOR is made by DUPLICATING TECHNOLOGIES Inc., they are not affiliated with HAPPY COMPUTERS.

COMPLETE 810 HAPPY DRIVE PACKAGE just $219.95*

order number HM1

The most fantastic offer ever made! A complete disk drive with a version 7 HAPPY ENHANCEMENT installed. This custom case Atari 810 disk drive is made by B & C Computervisions. Fully compatible with the Atari 810; the work-horse of disk drives for Atari 8 bit computers. Comes completely assembled, with power pack, I/O cable, and WARP SPEED SOFTWARE with instructions, ready to use. Not available outside the United States. *Shipping and handling extra on this item.

HAPPY 1050 CONTROLLER just $64.95

order number HC2

For use only with HAPPY ENHANCED 1050 disk drives. Provides convenient control of high speed reading and writing modes. Allows software and front panel switch control of write protect. Prevents writing over valuable data and allows writing to disk flip side. No soldering installation required. Includes indicator LED. Complete instructions on installation and use included. SAVE!!!: Get the CONTROLLER for $35.00 when ordered with the HAPPY 1050 ENHANCEMENT.

WARP SPEED SOFTWARE VERSION 7 (not sold separately)

Included with CHEERUP UPGRADE, HAPPY 810 & 1050 ENHANCEMENT, B & C 810 HAPPY DRIVE package, and 810 VERSION 7 UPGRADE, now at no extra charge! While others try, they cannot match the features of the proven performer that lets you get the most out of your ENHANCED disk drive. Disk based software package includes the following programs: The Menu options program, which displays system status, controls HAPPY drive modes, and selects our exclusive TRACER function. The HAPPY BACKUP and COMPACTOR programs, which back up more Atari software than any other Atari disk drive enhancement, and operate with one or two HAPPY drives. The MULTI DRIVE backup, which uses our exclusive method for simultaneous reading and writing with up to four HAPPY drives, making three complete disk copies WITH VERIFY, in under two minutes. The DIAGNOSTIC, which allows the user to verify proper HAPPY drive performance. The SECTOR COPIER, which provides the fastest single drive disk copying and can be used with RAMDISK, plus a WARP SPEED DOS and other fantastic features. Unlike others, our WARP SPEED SOFTWARE programs are written in machine language, for maximum speed and efficiency.

SELECT A HIGH SPEED DOUBLE DENSITY DOS

Both of these disk operating systems support the fastest speed with both HAPPY 810** and 1050. With the HAPPY 1050, you get true double density for maximum storage. WARP SPEED DOS XL is HAPPY's own version of OSS DOS XL. It offers the best memory utilization for the more technically oriented user. WARP SPEED DOS XL ordered alone is $29.95, order number HC4. TOP DOS version 1.5 is menu driven, and is better suited for those that have only one disk drive, or are less technically oriented. Since only TOP DOS supports the medium ("enhanced") density, it is better suited for those with more than one 1050, but only one HAPPY 1050. Only the HAPPY 1050 will operate in true double density. TOP DOS version 1.5 ordered alone is $39.95, order number HC6. SAVE!!!: Take half off the price of either or both DOS programs when you order these with any other item (not DOS) in this ad. **810 HAPPY must be version 7 compatible to use these DOS programs at high speed; see below.

810 VERSION 7 UPGRADE

This hardware module updates older 810 HAPPIES to have our newest features. This upgrade permits these units to be compatible with the version 7 software and high speed DOS programs. This is the only hardware upgrade we have ever required, and with all the new features added, it is well worth the step upward. (Call or write our office to order.)

INFORMATION AND SERVICES

All our products are fully compatible with all Atari 8 bit computers. We offer installation of any product we sell. We offer a repair service for disk drives equipped with our products. Call our office number for details.

---

24 HOUR INFORMATION MACHINE At HAPPY COMPUTERS, you can talk directly to the product designer! Our office hours are 9 a.m. to 5 p.m. Monday thru Friday, Pacific time. You can also call our 24 hour information machine (408) 778-6092 for after hours help, other specials, and discount prices.

ORDER TOLL FREE IN THE USA If you know exactly what you want to order, and do not have any questions, you can save the price of a phone call by using our toll free order service for MASTERCARD / VISA or COD orders. The toll free number does *not* connect you with our office. They CANNOT answer any questions accurately. They can only take your ordering information. Have your order *numbers and credit card* number (if using credit card) ready, and call (800) 538-8157 outside California, or (800) 672-3470 inside California; ask for extension 817 to place order. You must provide the address of the credit card holder. The toll free number operates 6 a.m. to 12 midnight Monday thru Friday, and 8 a.m. to 8 p.m. on weekends, Pacific time. It takes several days from the time you place your order on the toll free line until your order reaches our office and is processed.

FOR FASTEST RUSH DELIVERY SERVICE Call our office directly. We can help with all the answers to your questions, and will process your order immediately! Our office phone is (408) 779-3830.

- **ALL PRICES** except disk drive include shipping in the U.S.A.
- **NO EXTRA CHARGE** for credit card or COD
- **FOREIGN ORDERS** add $10.00 for shipping
- **CALIFORNIA RESIDENTS** add 7% sales tax
- **QUANTITY & OTHER DISCOUNTS** available

CIRCLE 025 ON READER SERVICE CARD



P. O. BOX 1268 • MORGAN HILL, CA 95037 • 408/779/3830
9 A.M. TO 5 P.M. • MONDAY THRU FRIDAY

I/O Board

TURN C INTO PASCAL?

As a new C programmer wishing to learn the already hard subject of interfacing C into GEM, I do not appreciate your published C source code filled with **#defines** that turn it into "Pascal." Will you ensure that any future C source code is straight C and not **#define**d to the hilt into some "other" language?

Ralph E. Freshour

*Different programmers write programs in different ways. The person who programs for us in C feels the operator set in C can be (and is often) abused until the program becomes unreadable. Also, it seems the majority of people reading The ST Resource know some BASIC or PASCAL, and are encountering C for the first time. Since C allows its operators to be re-defined, they get changed from the curly brackets to "begin...end" or "for...next", or whatever is applicable. However, we have a simple solution for you. Type in the code as it appears in the magazine, then run your source code through CP68.PRG, and the file it puts out (yourfile.**i**) will contain pure, clean C source code without any **#defined** Pascal in it anywhere.*—ANTIC ED

Help!

MENU MAESTRO

If *Menu Maestro* (January 1987) is "freezing" your XL or XE keyboard, just add the following line for a quick thaw:

```
150 IF PEEK(65521)=2 OR
PEEK(65521)=1 THEN
A$(100,100)="Q":A$(101,101)=
CHR$(251)
```

The TYPO II Code for this line is SY.

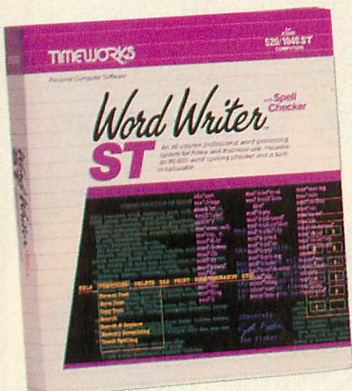
Antic welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.

Send letters to: Antic I/O Board, 544 Second Street, San Francisco, CA 94107.

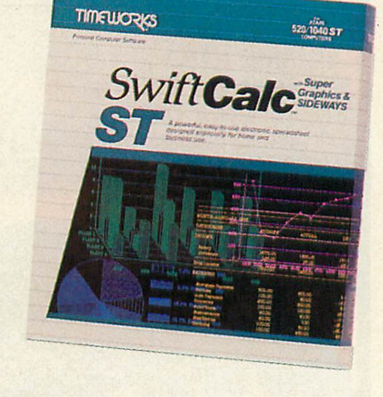
CIRCLE 028 ON READER SERVICE CARD

IF YOU CAN FIND A BETTER ATARI ST PROGRAM WE'LL BUY IT FOR YOU!*

Full GEM interfacing, convenient Quick Keys, and many other unique features of our own.







WORD WRITER ST with Spell Checker

A full-featured, professional word processing system for home and business use. You get:

- **A Continuous Spell Checker** that identifies misspelled words *as you are typing* your document.
- **An additional 85,000 word, built-in Spell Checker** that checks your entire document – at your command!
- **On-Screen** underlining, *italics* and **boldface** – as you write.
- **An Outline Processor** that quickly organizes notes, facts, and ideas in convenient outline format.
- Every other feature you'll need for everyday word processing, plus most of the features found in more expensive programs.

DATA MANAGER ST with Report Writer

A complete general information Storage and Retrieval System with report writing, business graphics, and label making capabilities. Plus, you get:

- **Flexibility** that allows you to modify your data base structure by changing the size or position of fields of information – at any time.
- **A complete Report Writer** that generates customized data reports. You specify the title, location, and sequence of each column.
- **An extensive Business Graphics Package** with pie charts, bar charts, line plots, point plots, hi-lo-close stock price plots, and more.
- **A Label Maker** that prints your important information onto all types of labels.

SWIFTCALC ST with Sideways

A state-of-the-art spreadsheet for home and business use. You get:

- **8192 rows and 256 columns provide up to 2,048,000 cells** (locations) in which to place information.
- **Super Graphics** graphically display and print out business information using pie charts, bar charts, line plots, point plots, hi-lo-close stock price plots, and more.
- **Windows** allow you to work on two sections of your spreadsheet simultaneously.
- **Sideways** lets you print all columns on one continuous sheet . . . *sideways*.
- **Help Screens,** help you use the program – without referring to your manual.
- **Formatting** – Choice of five formats: Decimal (up to 9 places); Graphics; Exponential Notation; $ Sign & Commas.

With Timeworks you get more than software. . .

You Get Our Customer Technical Support Team – free to all registered users.

With Timeworks you get our Money Back Guarantee*
If you can find anything that works better for you – and it's available – we'll buy it for you. Details inside every Timeworks package.**

You Get Our Liberal Upgrade and Exchange Policy – Details are inside every Timeworks package.



More power for your dollar

Timeworks, Inc. 444 Lake Cook Road, Deerfield, Illinois 60015
312-948-9200

For the Atari 520/1040 Computers.***

Suggested Retail List Price:
$79.95 each

Available now at your favorite dealer, or call Timeworks.

TO ORDER CALL:
1-800-535-9497

These Programs INTERFACE with Each Other

** Offer expires 90 days after date of original purchase.
*** Registered trademark of Atari Corp.

CIRCLE 053 ON READER SERVICE CARD

CIRCLE 041 ON READER SERVICE CARD

S&S

S & S Wholesalers, Inc.

226 Lincoln Road Miami Beach, FL 33139

1-800-233-6345
ORDERS ONLY

WHOLESALE TO THE PUBLIC
BUY BELOW DEALER COST!

ATARI HARDWARE

130XE Computer	$134.90
65XE Computer	$ 87.90
800 XL Computer	$ 79.90
1200 XL Computer	$ 69.90
1050 Disk Drive	$134.90
1027 Printer	$ 99.90
XMM801 Printer	$199.90
XM801 Modem	$ 37.90
XC11 Data Cassette	$ 37.90
Atari Light pen	$ 37.77
Atari Touch Tablet	$ 42.77
800 XL Power Supply	$ 29.77

EPSON PRINTERS

LX 80 w/Tractor	$259.90
FX 85	$379.90
FX 268	$504.90

PANASONIC PRINTERS

KXP 1080	$199.00
KXP 1091	$249.00
KXP 3131 Daisy Wheel	$279.00
Panasonic Ribbons	$ 8.77
Parallel Printer Cable	$ 18.70

ST SOFTWARE

Hitchhikers Guide to Galaxy	$ 23.97
Infidel	$ 26.97
Leather Goddesses of Phobos	$ 23.97
Moon Mist	$ 23.97
Planetfall	$ 23.97
Sea Stalker	$ 23.97
Sorcerer	$ 26.97
Spellbreaker	$ 29.97
Starcross	$ 29.97
Suspect	$ 26.97
Suspended	$ 29.97
Trinity	$ 23.97
Wishbringer	$ 23.97
Witness	$ 23.97
Zork I	$ 23.97
Zork II	$ 26.97
Zork III	$ 26.97
Final Word	$ 87.00
Hex	$ 23.97
PC/Intercomm	$ 74.40
F-15 Strike Eagle	$ 23.97
Gunship	$ 23.97
Silent Service	$ 23.97
Soft Spool	$ 23.97
Time Bandits	$ 23.97
Your Financial Future	$ 23.97
A Mind Forever Voyaging	$ 26.97
Ballyhoo	$ 23.97
Cutthroats	$ 23.97
Deadline	$ 29.97
Enchanter	$ 23.97
ST Accounts	$144.77
Checkminder	$ 44.97
Chessmaster 2000	$ 27.97
Lands of Havoc	$ 11.97

ST SYSTEMS

COLOR SYSTEM
520 ST Computer
SF 354 Disk Drive
SCI 224 Color Monitor
Basic/Logo/First Word $779.00

MONOCHROME
520 ST Computer
SF 354 Disk Drive
SCI 24 Monitor
Basic/Logo/First Word $569.00

1040 COLOR & MONO SYSTEMS

IN STOCK
CALL FOR PRICING...

KOALD CLOSEOUT

Koald Muppet Pad	$ 19.77

MICROPROSE

Aerojet	$ 20.77
F15 Strike Eagle	$ 19.47
Conflict in Vietman	$ 22.77
Gunship	$ 22.77
Silent Service	$ 24.77

BATTERIES INCLUDED

Consultant	$ 35.77
Paperclip	$ 35.97
Paperclip w/Spell	$ 47.77

ST SOFTWARE

ALT	$ 17.97
Animator	$ 23.97
Back-up	$ 23.97
Business Tools	$ 29.97
Calendar	$ 17.97
Cards	$ 23.97
Cornerman	$ 29.97
D.F.T.	$ 29.97
DOS Shell	$ 23.97
Easy Record	$ 47.97
Echo	$ 23.97
Eight Ball	$ 23.97
Flip Side	$ 23.97
Gold Runner	$ 23.97
Intro to ST Logo	$ 29.97
Kissed	$ 23.97
Financial Cookbook	$ 30.97
Golden Oldies	$ 21.97
New Technology Coloring Book	$ 12.97
Ogre	$ 24.97
Skyfox	$ 27.97
Ultima III	$ 36.67
Super Huey	$ 23.77
Alternate Realty "The City"	$ 29.77
Mercenary	$ 23.77

ATARI 128K Word Processing System

130XE Computer
1050 Disk Drive
1027 Printer
Atariwriter Plus
2 Games $377.77
w/ XMM 801 Printer $447.77

ST HARDWARE

520 ST Computer	$399.90
SF 314 Disk Drive	$207.77
SF 354 Disk Drive	$149.77
SCI 224 Monitor	$297.77
SCI 24 Monitor	$167.77
SM 804 Printer	$199.77

ST HARD DRIVES

Atari 20MB	$ 649.90
Supra 10MB	$ 629.90
Supra 20MB	$ 639.90
SUPRA 30MB	$ 829.90
SUPRA 60MB	$1789.90

8 BIT BACK-UP PROGRAM

Chipmunk	$ 29.77

ACCOLADE

Dam Busters	$ 17.90
Fight Night	$ 17.90
Hardball	$ 17.90
Law of the West	$ 17.90

XLENT SOFTWARE

First XLENT Word Processor
Miniature Golf
Rubber Stamp

ST SOFTWARE

M-Copy	$ 47.97
M-Disk	$ 23.97
M-Dupe	$ 17.97
Major Motion	$ 23.97
Mi-Term	$ 29.97
Michtron BBS	$ 29.97
Michtron Utilities	$ 35.97
Mighty Mail	$ 29.97
Mission House	$ 23.97
Mud-Pies	$ 17.97
Personal Money Management	$ 29.97
Pinball Factory	$ 23.97
Pro Football Wizard	$ 23.97
VIP Professional	$ 94.77
Personal PASCAL	$ 44.97
Person Prolog	$ 53.97
Autoduel	$ 30.97
Data Manager ST	$ 47.97
Super Graphics ST	$ 29.97
Swiftcalc St	$ 47.97
Sylvia Porter	$ 47.97
Sylvia Porter Vol 2	$ 47.97

OKIDATA

Okimate 10	$124.77
Okimate 20	$134..77
Okimate 120	$224.77
Plug-N-Play	CALL

STAR MICRONICS

NX 10	$239.90
LU 1210	$199.77

DISKETTES

Sony DSDD 5¼"	$ 9.97
Memorex DSDD 5¼"	$ 8.97
Precision DSDD 5¼"	$ 7.97
Bonus by Verbatim DSDD 5¼"	$ 6.97
Sony 3½" DSDD	$ 25.50
Sony 3½" SSDD	$ 19.50
Winners 3½" DSDD	$ 24.00

MONITORS

Samsung 12" Green	$ 47.77
Nec 1225 Color	$124.77
Goldstar 12" Color	$127.77
Monitor Cable	$ 5.77
Samsung 14" Color	$139.77
Sentrek 12" Amber	$ 59.79

BRODERBUND

Karateka	$ 17.00
Printship	$ 25.90
LIB 1/2/3	$ 14.90
Companion	$ 24.90
Bank St. Writer	$ 32.90

SYNAPSE

Syncalc	$ 32.77
Synfile +	$ 32.77
Templates	$ 14.77
Synchron	$ 32.77
Syntrend	$ 32.77

ST SOFTWARE

Beatles Musicdisc	$ 11.97
Classics Musidisc	$ 11.97
Midiplay	$ 29.97
Regent Base	$ 59.97
Regent Pak	$ 29.97
Regent Word	$ 29.97
Regent Word II Gem Version	$ 59.97
Spell Checker	$ 29.97
E-Z Calc	$ 41.97
Help Calc	$ 14.97
Help-mate	$ 17.97
Helpmate	$ 23.97
Inventory Master	$ 59.97
Word Writer ST	$ 47.97
Mega Font ST	$ 23.77
Rubber Stamp ST	$ 28.77
ST Music Box	$ 29.77
Copy II ST	$ 23.77
VIP Lite	$ 49.77
Space Quest	$ 29.97
Ultima II	$ 35.97
Winnie the Pooh	$ 14.97

ST HARDWARE

520 ST Computer	$399.90
SF 314 Disk Drive	$207.77
SF 354 Disk Drive	$149.77
SCI 224 Monitor	$297.77
SCI 24 Monitor	$167.77
SM 804 Printer	$199.77

ST HARD DRIVES

Atari 20MB	$ 649.90
Supra 10MB	$ 629.90
Supra 20MB	$ 639.90
SUPRA 30MB	$ 829.90
SUPRA 60MB	$1789.90

JOYSTICKS / ACCESSORIES

WICO The Boss	$ 10.77
WICO Ball	$ 14.77
WKOS Way	$ 18.77
Kraft	$ 8.77
Recoton Big Shot	$ 11.77
5¼" Drive Cleaner	$ 8.77
5½" Drive Cleaner	$ 9.77
CRT Cleaner	$ 14.77
800 XL Cover	$ 7.77
520 ST Cover	$ 9.77
Drive Cover ST	$ 7.77
1050 Cover	$ 7.77
1025 Cover	$ 7.77
1017 Cover	$ 7.77
130 XE Cover	$ 7.77
1224 Cover	$ 11.77

ST SOFTWARE

HABA Special	$ 87.43
HABA Writer	$ 44.97
HABADEX Phonebook	$ 35.97
HABAMerge	$ 23.97
HABASpell	$ 23.97
HABAView	$ 44.97
Hippo-C	$ 44.97
Home Accountant	$ 44.97
Mailroom	$ 44.97
Professional Business Letters	$ 29.97
Golden Path	$ 23.77
Guild of Thieves	$ 23.77
Pawn	$ 23.77
Starglider	$ 23.77
Hippo Computer Almanac	$ 20.97
Hippo Disk Utilities	$ 29.97
Hippo Eprom Burner	$ 97.77
Hippo Jokes and Quotes	$ 20.97
Hippo Ramdisk	$ 20.97
HippoArt I	$ 23.97
HippoBackgammon	$ 23.97
HippoConcept	$ 53.97
HippoLedger	$ 53.97
HippoPixel	$ 23.97
HippoSimple	$ 29.97
HippoSpell	$ 23.97
HippoWord	$ 53.97
HippoWord Fonts	$ 23.97
Cambridge Lisp	$119.97
ISO PASCAL	$ 59.97
Lattice C Compiler	$ 89.97
Macro Assembler	$ 47.97
Menu	$ 17.97
General Ledger	$ 59.97
Kempelen	$ 23.97
King's Quest II	$ 29.97
King's Quest	$ 29.97
King's Quest III	$ 29.97
Payroll	$ 59.97
Series Bundle (CD,AR,GL)	$119.97

ORDERS ONLY
1-800-233-6345
ORDERS RECEIVED BEFORE 12:00 PM WILL BE SHIPPED SAME DAY.

CIRCLE 041 ON READER SERVICE CARD

CUSTOMER SERVICE OR IN FLORIDA (305) 538-1364

FREE FREIGHT ON ALL ORDERS WITHIN CONTINENTAL U.S. OVER $100.00

Orders under $100.00 add $4.00 shipping and handling. C.O.D. orders add $4.00.
Prices reflect a 3% cash discount. All Postal orders add 6% shipping and handling. add 3% for VISA/MC
Florida residents add 5% sales tax
Personal checks allow 2 weeks for processing Prices Subject to Change Without Notice



BY HEATH LAWRENCE

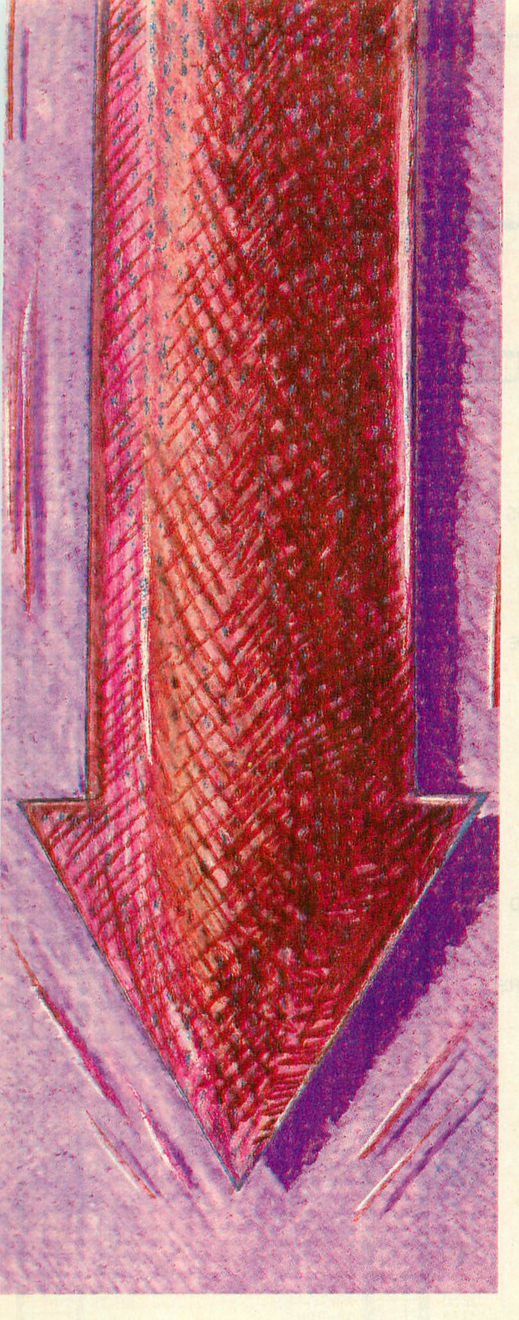
Vectron

Atomic arrow strategy game

*Manipulate atomic particle blasters and energy deflectors to destroy more targets than your opponent. This strategic marksmanship game is **Antic's** second offering from the author of* Cliffhanger *(**Antic**, November, 1986). The BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.*

Your Atari starts Vectron by randomly placing a playfield of 50 energy deflectors (arrow-shaped targets) within a border of atomic containment gutters. Opposing atomic particle launchers are at the left and right sides of the field. These two launchers can move up or down. The scores of each player and the number of deflectors remaining are displayed at the bottom of the screen.

Arrangement of the energy deflectors is crucial to the game. Movement of launched projectiles is controlled by the directions in which deflector arrows point. For example, if your projectile is hurtling horizontally across the field and strikes a deflec-



tor arrow pointing *up*, the projectile starts moving upward. At the same time, it blows up the deflector and increases your score by one point.

You win by destroying more deflectors than your opponent. Naturally you want to keep your projectiles in play as long as possible. You do this by finding lengthy "chains" of targets, which will usually make your projectile change direction constantly.

Spend time analyzing the field's target setup before you do anything else during your turn. See which deflector directions and positions will do you the most good. Always look for a new chain, because the playfield is constantly changing. Don't rule out isolated deflectors—they just might get you into a chain that looked inaccessible.

FOUR PHASES

Each player's turn is divided into four phases. During the first phase, the message DEFLECTOR TYPE appears at the top of the screen. Push your joystick in the direction of an arrow that you want to put into play. That arrow direction will be displayed at the top of the screen. Press the joystick button to move to the second part of your turn.

You are now ready to position the deflector. An *inverse* image of your deflector appears in the middle of the playfield. Use your joystick to move the cursor to the desired position and press the joystick button. But only a buzzer will sound if you try to lay one deflector over another.

You only get to add one deflector during your turn, so you must make sure to place it where it will do you the most good.

Next, move the atomic particle blaster up or down with the joystick. When it is lined up properly, press the joystick button to launch a projectile. The projectile keeps moving in one direction until it hits a deflector.

If the projectile strikes a blaster it will reverse direction—and the blaster disappears until the next turn. So don't hesitate to use your opponent's blaster (or even your own) to keep a chain going.

When the projectile hits a containment gutter, it will roll off the screen and your turn is over. Turns continue until there are no targets left. Whoever has the highest score gets a musical victory salute from Vectron.

TYPING VECTRON

Type in Listing 1, VECTRON.BAS, check it with TYPO II and SAVE a copy. If you have trouble typing in the special characters in lines 575 and 581, leave those lines out. Instead, Listing 2 will make a a disk or cassette file called LINES.LST that creates those lines for you. LIST a copy of Listing 2 after you check it with TYPO II. Now type NEW and LOAD Listing 1, then ENTER the file created by Listing 2. Make sure you SAVE a copy of the merged program before you RUN it.

To change the number of targets at the start of the game, change the 50 in line 540 to the number you want. Having more than 99 targets will slightly affect the second player's score display.

To increase the speed of the projectile, remove the FOR/NEXT loop from line 60. To decrease the speed, *increase* the number in that loop.

PROGRAM TAKE-APART

Lines 10-20—Jump to initialization routines.

40-100—Establish the initial position of projectile, add to the horizontal and vertical positions of projectile and check for collision with gutter or deflector.

120-140—Indicate player turn and adjust the variables accordingly.

160-180—Check trigger for projectile launch and joystick for launcher movement.

200-230—Check trigger for deflector type selection and display deflector options according to joystick input.

250-320—Check joystick for cursor movement and check trigger for selection of deflector location.

340-380—Display projectile rolling down gutter.

400—Display scores and targets left.

420-480—Display game over, scores and winner, play victory tune and display Play Again option.

500-540—Initialize the variables and create the playfield.

560-590—Display the title screen and redefine the characters.

610-630—DATA for shapes.

650—DATA for tune.

Heath Lawrence lives in Port Elgin, Ontario, and has been programming on his Atari 800 for nearly five years. His game Cliffhanger *appeared in the November, 1986 issue of* ***Antic****.*

Listing on page 94 

Black Patch Systems

DeskCart!

THE ULTIMATE DESK ACCESSORY CARTRIDGE!

☐ Adds 14 convenient, powerful functions to your ST:

• CALENDAR with appt. scheduler & alarms. • Multiple NOTEBOOKS w/full-screen editing. • CARD FILER w/searching, sorting & printing. • TYPEWRITER window for labels & envelopes. • ADDRESS BOOK w/searching & auto-dialing. • TERMINAL EMULATOR w/upload & download. • KEYBOARD MACROS for any program use. • Fast, resizeable RAMDISK driver. • DISK UTILITIES: Format, Copy, Delete & Rename. • Multi-tasking PRINT SPOOLER w/printer controls. • CONTROL PANEL w/load & save options. • SCREEN DUMP to any graphics-comp. printer. • System MEMORY TEST & cartridge self-test.

☐ Uses only one Desk Accessory entry! ☐ All accessories operate as independent windows! ☐ ROM cartridge loads immediately & uses no program memory! ☐ Includes Time/Date clock hardware w/battery back-up! ☐ Comes w/tutorial diskette & complete manual.

DESKCART! SPECIAL-ONLY $69.95!

ST HARDWARE

1040 ST MONO	CALL
1040 ST RGB	CALL
520 ST MONO	CALL
520 ST RGB	CALL
SF354 SS/DD	CALL
SF314 DS/DD	CALL
SM124 MONOCHROME	CALL
SC1224 RGB	CALL
SHD 204 DRIVE	CALL
ST PRINTER CABLES	9.99
ST MODEM CABLES	9.99

PRINTERS

ATARI SMM 804	CALL
ATARI XMM 801	CALL
PANASONIC 1080i	214.00
PANASONIC 1091i	259.00
PANASONIC 1092	309.00
PANASONIC 1592	425.00
PANASONIC 3131	259.00
STAR MICRONICS NX-10	229.00

MODEMS

QMI 1200ST	129.00
ATARI XM301	35.75
ATARI 1200	CALL
SUPRA 300AT	33.99
AVATEX 1200	78.99
AVATEX 1200HC	128.99

DISKS

3½" DISKS
SONY PACKS OF 10

SS/DD	15.00
DS/DD	21.00

5¼" DISKS
BONUS PACKS OF 10

SS/DD	6.00
DS/DD	7.00

ST SOFTWARE

ACTIVISION

BORROWED TIME	32.50
HACKER	28.99
HACKER 2	31.75
MINDSHADOW	32.50
LITTLE COMPUTER PEOPLE	32.50
PAINTWORKS	43.99
MUSIC STUDIO	37.99
CHAMP. BASEBALL	CALL
PORTAL	CALL
BASKETBALL	28.99
GAMEMAKER	CALL
PEBBLE BEACH	CALL

ACCESS

LEADER BOARD	25.99

ACCOLADE

MEAN 18	26.99

ATARI

HOME PLANET	23.75
JOUST	23.75
STAR RAIDERS	23.75
DBMAN	CALL
IBM EMULATOR	CALL

ACADEMY

TYPING TUTOR	24.50

ANTIC

A-CALC	39.99
A-SEKA	23.99
A-RAM	14.50
CAD 3-D	33.99
FLASH	27.50
GST C	59.99
GST ASSM	53.50
EXPERT OPINION	66.50

BATTERIES INCLUDED

DEGAS	25.99
BTS: THE SPREADSHEET	CALL
THE CONSULTANT	CALL
PORTFOLIO	124.95
I*S TALK	49.50
PAPERCLIP ELITE	CALL
DEGAS ELITE	49.99
I*S TIME	CALL
HOMEPAK	CALL
THUNDER	25.99
TIMELINK	32.50
B/GRAPH ELITE	CALL

CENTRAL POINT

COPY II ST	25.99

EPYX

ROGUE	25.99
WORLD GAMES	25.99
WINTER GAMES	25.99
TEMPLE OF APSHAI	25.99
CHAMPIONSHIP WRESTLING	25.99
SUPER CYCLE	25.99

FIREBIRD

THE PAWN	28.99
STAR GLIDER	28.99
GOLDEN PATH	28.99

BECKMEYER

MICRO C SHELL	34.99
MICRO RTX	47.99
MTC SHELL	81.50

MICHTRON

BBS 2.0	49.99
ANIMATOR	27.50
TIME BANDITS	26.75
MAJOR MOTION	27.50
CORNERMAN	33.75
MIGHTY MAIL	33.75
DOS SHELL	27.50
UTILITIES	CALL
BUSINESS TOOLS	33.75
KISSED	27.50

MICROPROSE

SILENT SERVICE	26.99
GUNSHIP	CALL
F-15 STRIKE	CALL

MI-GRAPH

EASY DRAW	49.99

OMNITREND

UNIVERSE 2	47.99

We also carry ATARI 8-Bit Hardware and Software. Call for lowest prices and availability information.

OSS

PERSONAL PASCAL	47.50
PERSONAL PROLOG	47.50

ORIGIN SYSTEMS

ULTIMA III	36.50
ULTIMA IV	CALL

REGENT

REGENT BASE	62.50
REGENT WORD II	62.50

SIERRA ON-LINE

KINGS QUEST I	33.75
KINGS QUEST II	33.75
ULTIMA II	39.99
BLACK CAULDRON	27.50
WINNIE THE POOH	16.99
ST ONE-WRITE	39.99

SSI

PHANTASIE	26.50
BASKETBALL	CALL

SUBLOGIC

FLIGHT SIMULATOR	33.99
JET	CALL

UNISON WORLD

PRINTMASTER	25.99
ART GALLERY 1	19.99
ART GALLERY 2	19.99

XLENT SOFTWARE

RUBBER STAMP	25.99
MUSIC BOX	31.75
TYPESETTER ELITE	33.00
WRITE 90 DEGREES	19.99

QMI

ST TALK 2.0	21.99
ST-NET	CALL
DO-IT!	17.99
BB/ST	31.99
DESKCART!	69.95

METACOMCO

MCC PASCAL	73.49
LATTICE C	97.99
MACRO ASSEMBLER	54.75

TDI

USCD PASCAL	52.50
MODULA-2	52.50
MODULA-2 DEV	98.93

STARTRONIKS

FONT WRITER	28.99
DESK MASTER	28.99

TIMEWORKS

WORDWRITER ST	51.99
DATA MANAGER ST	51.99
SWIFTCALC ST	51.99

FTL

RPV	25.99
MICRO COOKBOOK	32.50
DUNGEON MASTER	25.99
SUNDOG	25.99

ELECTRONIC ARTS

CHESS MASTER 2000	31.50
FINANCIAL COOKBOOK	34.99

PARADOX

ST KARATE	25.99
ST SPACE STATION	25.99
ST PROTECTOR	24.99

PSYGNOSIS

DEEP SPACE	32.99
ARENA	25.95
BRATACCUS	31.50

MISC.

MEGAMAX C	159.99
MICROLEAGUE BASEBALL	CALL
FORTRAN 77	99.95
ACTION PAK	29.99
ST POOL	22.99
ZOOMRACKS II	72.50
GRAPHIC ARTIST	129.95
DAC ACCOUNTING	46.99
LDW BASIC	46.50
HARRIER STRIKE MISSION	32.00
1 MEG UPGRADE	134.95
ABACUS	CALL
ANSIGRAPH	54.99
SUPER HUEY	25.99
MERCENARY	25.99
PSION CHESS	42.99
INFOCOM	CALL
MARK WILLIAMS C	CALL
MAGIC SAC +	109.00
MacROMS	CALL
SURREAL TIME CLOCK	49.95





Black Patch Systems

MasterCard

Orders Only

Call TOLL FREE 1-800-ATARI-02 or 301-987-2300 (toll call)
Write: Black Patch Systems, P.O. Box 501, Arnold, MD 21012
For technical information or order inquiries, call 301-987-0019

HOW TO ORDER: CASHIER CHECK, MONEY ORDER...NO PERSONAL CHECKS...NO C.O.D.'S... SHIPPED UPS...ALL PRICES AND POLICIES SUBJECT TO CHANGE WITHOUT NOTICE.
SOFTWARE: ALL PRICES INCLUDE SHIPPING. NO CREDIT CARD SURCHARGE. FREE AIR SHIPPING ON PURCHASE OF SOFTWARE OVER $150.00.
HARDWARE: ONLY 2% CREDIT CARD SURCHARGE. SHIPPING ORDERS UNDER $100.00 ADD $3.00. SHIPPING ORDERS OVER $100.00 ADD $5.00.
INTERNATIONAL: WILL INCLUDE ACTUAL FREIGHT CHARGED ON ALL ORDERS OUTSIDE THE CONTINENTAL U.S., INCLUDING A.P.O.
POLICIES: NO RETURNS WITHOUT AN AUTHORIZED NUMBER. NO RETURNS UNLESS DEFECTIVE. ALL DEFECTIVE ITEMS WILL BE EXCHANGED...NO EXCEPTIONS.

NO CREDIT CARD SURCHARGE ON SOFTWARE ORDERS.
FREE SHIPPING ON ALL SOFTWARE/FREE AIR SHIPPING ON ALL SOFTWARE OVER $150.

On the Road to Moscow . . .

As the German Wehrmacht approached the open steppes around Smolensk, the invasion of the Soviet Union was on schedule. At this rate, the army would capture Moscow and throw the Russians out of the European continent by the time the snows fell.

At the head of the Panzergruppe invading central Russia was General Heinz Guderian, the man who turned the potential of armor into the reality of Blitzkrieg warfare. Opposing him were masses of Soviet infantry and armor determined to defend their homeland, but untried in battle. With Guderian's armor and motorized infantry divisions approaching the ancient city, the stage was set for another encounter with the Nazi juggernaut.

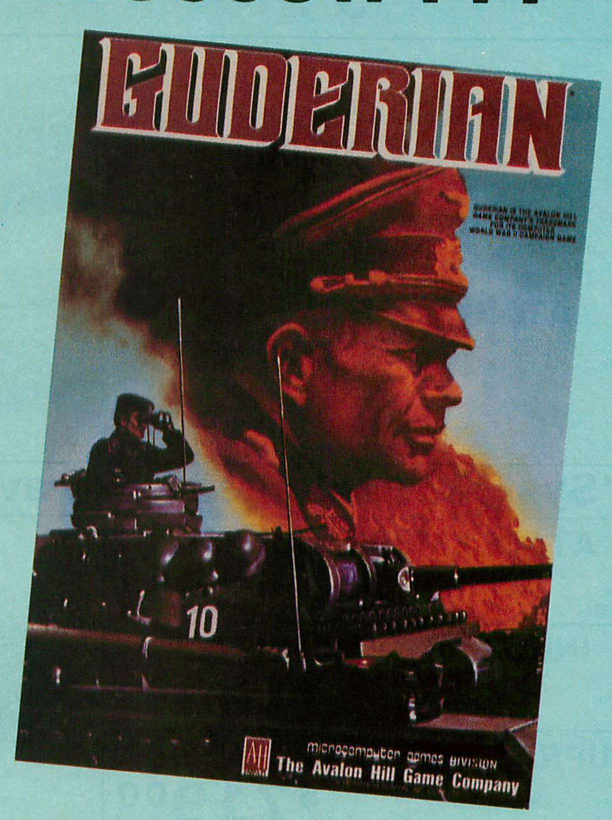
Guderian simulates this critical campaign of WWII, using the acclaimed joystick-driven system from Gulf Strike. On the full-color scrolling map of central Russia, the German player must master Blitzkrieg tactics to encircle and overrun Soviet divisions and drive deep enough into Russia to make the capture of Moscow possible. At your command are infantry divisions, panzer regiments, motorized infantry, panzergrenadiers, even the 1st German Cavalry Division.

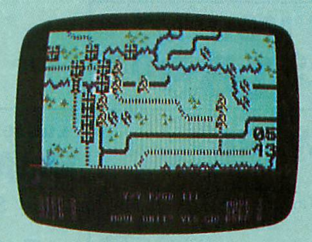
The Soviet player must work to counter the German threat, and make attacks capable of cutting off supply to the forward units. While your army is massive, it is also untrained. Soviet units begin play with a hidden strength revealed only at the moment of combat. Uncertainty is always present. The game becomes a tense contest as German units blunder into Soviet strongpoints, while Russian attacks can suddenly turn into a rout.

Guderian has a *solitaire option* allowing you to take command of either the German or Soviet armies, as well as overrun attacks, supply rules, Soviet leaders, rail movement and optional reinforcements. The rulebook introduces new players to historical gaming, explaining clearly concepts such as zones of control, supply, combat and movement. Planning map included.

The battle for Moscow was lost on the fields of Smolensk. Now is the time for you to re-create (and rewrite) history with **Guderian**.

COMPLEXITY: Intermediate
SOLITAIRE SUITABILITY: Very high
TIME SCALE: 2 days per turn
MAP SCALE: 10.5 km.
UNIT SCALE: Regiments and divisions
PLAYERS: One or two
PLAYING TIME: 1½ to 3 hrs.





***Guderian** has a full color joystick driven map display which easily allows commands to be executed*

Guderian is ready to run on your Atari® 8-bit, Apple II® family or Commodore® 64/128 home computer.
$30.00

Available at better computer, software and game stores or direct from



microcomputer games DIVISION
The Avalon Hill Game Company
A MONARCH AVALON, INC. COMPANY
4517 HARFORD • BALTIMORE, MD 21214

The Avalon Hill Game Company/MICROCOMPUTER GAMES Division—DEPT. A
4517 Harford Road, Baltimore, MD 21214, 1-800-638-9292
Please ship ________ **GUDERIAN** games. I have included 10% postage and handling for each game ordered.

PLEASE INDICATE METHOD OF PAYMENT
☐ CHECK ☐ MONEY ORDER ☐ CASH ☐ CHARGE

☐ American Express ☐ MasterCard ☐ Visa ☐ Choice

ACCOUNT NUMBER

Exp. Date ________

CALL TOLL-FREE 1-800-638-9292 for QUICK CREDIT CARD ORDERING—ASK FOR OPERATOR A

NAME ________
STREET ________ APT ________
CITY ________
STATE ________ ZIP ________

CIRCLE 066 ON READER SERVICE CARD

When you want to talk Atari



ATARI 130XE — $129^{00}
Order NO. AA130XE

ATARI 65XE — $89^{99}
Order No. AA65XE

ATARI 1020 COLOR PRINTER — $29^{99}
Order No. AA1020

ATARI 1025 PRINTER — DOT MATRIX — $124^{00}
Order No. AA1025

ATARI 1027 PRINTER — LETTER QUALITY — $99^{99}
Order No. AA1027

ATARI XM801 PRINTER — GRAPHICS — $209^{00}
Order No. AAXM801

"System Packages" are available for all Atari computers.

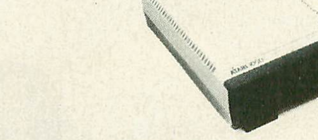
ATARI XM301 MODEM — $39^{99}
Order No. AA5XM301

INDUS GT DISK DRIVE — $189^{00}
Order No. IADD

SUPRA 20 Mb HARD DRIVE — $719^{00}
Order No. SJ0007

SUPRA 1200 AT MODEM — $159^{00}
Order No. SJ1200AT

ATARI 800XL — $64^{99}
Order No. AA800XL



ATARI 1050 DISK DRIVE — $129^{00}
Order No. AA1050
Purchase of Atari 1050 includes DOS 3.0

XL/XE SOFTWARE

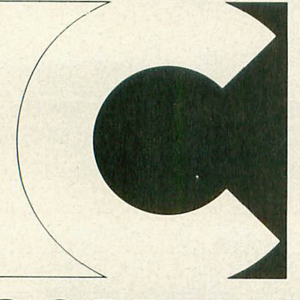
Accolade
Fight Night .... 19^{99}
Access
Leaderboard Golf .... 31^{99}
Atari
Music Painter .... 14^{99}
Millipede .... 7^{99}
Atari Writer Plus .... 39^{99}
Broderbund
Print Shop .... 29^{99}
Print Shop Companion .... 24^{99}
Graphics Library .... 17^{99}
Batteries Included
Homepack .... 29^{99}
Paperclip w/Spellpack .... 39^{99}
Cygnus
Starfleet 1 .... 34^{99}
Electronic Arts
Pinball Construction .... 17^{99}
Touchdown Football .... 14^{99}
Epyx
World Karate Championship 24^{99}
Infocom
Zork III .... 29^{99}
Wishbringer .... 29^{99}
Gamestar
Star League Baseball .... 21^{99}
Microprose
Top Gunner .... 19^{99}
Origin Systems
Ultima IV .... 39^{99}
Strategic Simulations
Gemstone Warrior .... 13^{99}
Colonial Conquest .... 29^{99}
Batallion Commander .... 27^{99}
Sub Logic
Flight Simulator .... 37^{99}
Scenery (S.F./L.A./Vegas) ... 15^{99}
X-Lent
Typesetter .... 29^{99}

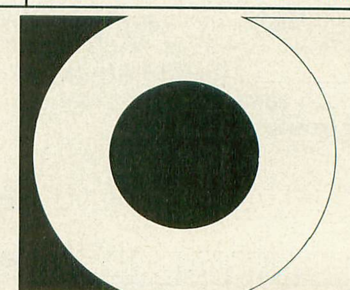
Loose, unboxed Atari
ROM CARTS
$3^{49} ea.
5 for $14^{99}

Basketball
Super Breakout
Space Invaders
3D Tic,Tac,Toe
Star Raiders
Missile Command
Asteroids
Centipede
Pac Man
Galaxian
Defender
Qix
ET Phone Home
Robotron
Eastern Front

ST SOFTWARE

Access
Leaderboard Golf .... 31^{99}
Activision
HackerII .... 39^{99}
Atari
DB Man .... 124^{99}
Batteries Included
DEGAS .... 34^{99}
Thunder .... 34^{99}
Cygnus
Starfleet 1 .... 39^{99}
Ditek
STA Accounts .... 179^{00}
Electronic Arts
Chessmaster 2000 .... 34^{99}
Epyx
Winter Games .... 29^{99}
Championship Wrestling ..... 29^{99}
Haba
HabaWriter .... 39^{99}
Hippopotamus
Computer Almanac .... 29^{99}
Infocom
Hitchhiker's Guide .... 29^{99}
Unicorn
PC Intercom .... 89^{99}
Mitchtron
Corner Man .... 39^{99}
Microprose
Silent Service .... 29^{99}
Optimized Systems
Personal Pascal .... 54^{99}
Sierra On-Line
Winnie The Pool .... 19^{99}
Strategic Simulations
Phantasie .... 29^{99}
Sub Logic
Flight Simulator II .... 39^{99}
X-Lent
Typesetter .... 29^{99}





COMPUTER MAIL ORDER

... you want to talk to us.

COMPLETE ATARI 1040 ST SYSTEM PACKAGE

Package includes: 1040ST computer with 1 Mb RAM and 3½" drive built-in, 192K ROM with TOS, Basic, Logo, ST Language, power supply and color or monochrome monitor.



Monochrome System	Color System
$789.00	$969.00

ATARI 354 SS/DD DISK DRIVE
Order No. AA354 — WHILE SUPPLIES LAST — $99.99

ATARI 314 1Mb DISK DRIVE
Order No. AA314 — $219.00

ATARI ST 20 Mb HARD DRIVE
Order No. AA51620 — $679.00

ATARI XM804 PRINTER
Order No. AAXM804 — DOT MATRIX GRAPHICS — $199.00

Call about the new 520ST-FM computer from Atari

SUPRA 30 Mb Hard Drive
Order No. SJHD30ST — $789.00

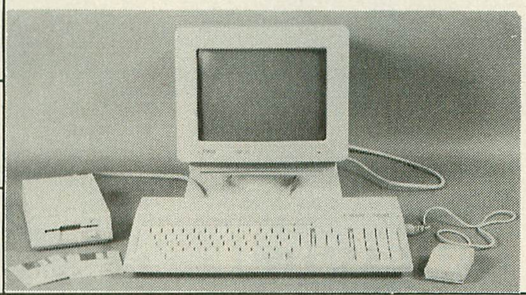
SUPRA 1200ST MODEM
Order No. SJ1200ST — $159.00

ANCHOR 520ST MODEM
Order No. AN520 — $139.00

ATARI 520 COMPUTER
Order No. AA520 — $359.00

COMPLETE ATARI 520 ST SYSTEM PACKAGE

Package includes: 520ST computer with modulator, disk drive, mouse Logo, Basic, and monochrome or color monitor.



Monochrome System
$579.00

Color System
$779.00

PRINTERS FOR ATARI ST/XL/XE SYSTEMS

CITIZEN
- MSP-10 (80 col.) $299.00
- MSP-15 (132 col.) $419.00
- MSP-20 (80 col.) $349.00
- MSP-25 (132 col.) $519.00
- Premier 35 .... $499.00

C.ITOH
- Prowriter 1550 .... $269.00
- Prowriter 8510SP .... CALL

EPSON
- LX-86 .... $299.00
- FX-85, FX-286 .... Call
- EX-800, EX-1000, RX-100 .... Call
- LQ-800, LQ-1000 .... Call

JUKI
- 6000 Series Letter Quality .... Call
- 5510 Dot Matrix .... Call
- 5510C Color Printer .... Call

NEC
- ELF360 Spinwriter $389.00
- 3000 Series Spinwriter $779.00
- Pinwriter 560, 660, 760 .... Call

OKIDATA
- Okimate 20 .... $129.00
- ML-182, ML-192, ML-193 .... Call
- ML-292, ML-293 .... Call

PANASONIC
- KX-1080i $219.00
- KX-1091i $309.00
- KX-1092 .... $339.00

TOSHIBA
- P321 24 Wire $489.00
- P351 24 Wire $1049.00

STAR MICRONICS
- LV-1210 120 cps $189.00
- NX-10 120 cps $229.00
- NL-10 Font Comp .... Call

CURTIS SUPPRESSORS
- Emerald $39.99
- Ruby $59.99
- Diamond $29.99
- Safe Strip $19.99
- Sapphire $49.99
- Universal Printer Stand $14.99

PRINTER INTERFACES
- ICD PR Connection $64.99
- Supra Microprint $39.99
- Supra 1150 .... $44.99
- Supra 1151 (1200XL) $44.99
- Atari 850 .... $109.00

BLANK DISKETTES

SONY	MAXELL
3½" SS/DD Box of 10 $14.49	3½" SS/DD Box of 10 $12.99
3½" DS/DD Box of 10 $20.49	3½" DS/DD Box of 10 $21.49
5¼" SS/DD Box of 10 .. $8.49	5¼" SS/DD Box of 10 .. $8.99
5¼" DS/DD Box of 10 .. $9.99	5¼" DS/DD Box of 10 $10.99

FLIP 'N FILE
Disk Holder (25 3½") .... $9.99 Disk Holder (50 5¼") .. $10.99

In the U.S.A. and in Canada

Call toll-free: 1-800-233-8950.

Outside the U.S.A. call 717-327-9575 Telex 5106017898

Educational, Governmental and Corporate Organizations call toll-free 1-800-221-4283

CMO. 477 East Third Street, Dept. B603, Williamsport, PA 17701

ALL MAJOR CREDIT CARDS ACCEPTED.

POLICY: Add 3% (minimum $7.00) shipping and handling. Larger shipments may require additional charges. Personal and company checks require 3 weeks to clear. For faster delivery use your credit card or send cashier's check or bank money order. Pennsylvania residents add 6% sales tax. All prices are U.S.A. prices and are subject to change and all items are subject to availability. Defective software will be replaced with the same item only. Hardware will be replaced or repaired at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee.

CIRCLE 012 ON READER SERVICE CARD



• Flight Simulator II
• Scenery Disks

The Challenge of Accomplished Flight

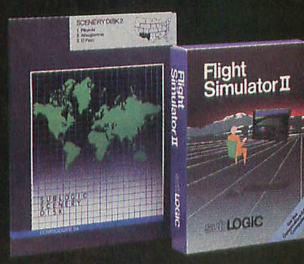
With a realism comparable to (and in some ways even surpassing) $100,000 aircraft flight simulators, Flight Simulator II includes full flight instrumentation and avionics, and provides a full-color out-the-window view. Instruments are arranged in the format standard to modern aircraft. All the radios needed for IFR flight are included. Front, rear, left, right, and diagonal views let you look in any direction. Program features are clearly documented in a 96-page Pilot's Operating Handbook.

For training in proper flight techniques, Flight Simulator II includes another 96-page instruction manual, compiled by two professional flight instructors with over 8,000 hours flight time and 12,000 hours of aviation teaching experience. You'll learn correct FAA-recommended flight procedures, from basic aircraft control through instrument approaches. To reward your accomplishments, the manual even includes a section on aerobatic maneuvers.

The Realism and Beauty of Flight

Go sight-seeing over detailed, realistic United States scenery. High-speed graphic drivers provide an animated out-the-window view in either day, dusk, or night flying modes.

Flight Simulator II features over 80 airports in four different scenery areas: New York, Chicago, Seattle, and Los Angeles. Additional Scenery Disks covering much of the United States are now available for all computer versions of Flight Simulator II.



Each disk covers a geographical region of the country in detail, and is very reasonably priced.

The Pure Fun of "World War I Ace"

When you think you're ready, you can test your flying skills with the "World War I Ace" aerial battle game. This game sends you on a bombing run over heavily-defended enemy territory. Six enemy fighters will attempt to engage you in combat as soon as war is declared. Your aircraft can carry five bombs, and your machine guns are loaded with 100 rounds of ammunition.

See Your Dealer. Flight Simulator II is available on disk for the Apple II, Atari 800/XL/XE, and Commodore 64/128 computers for $49.95. Additional Scenery Disks are $19.95 each. A complete Western U.S. Scenery six-disk set is also available for $99.95. For additional product or ordering information, call (800) 637-4983.



Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

ORDER LINE: (800) 637-4983
(except in Illinois, Alaska and Hawaii)
Open 7 AM to 9 PM Central Time

CIRCLE 047 ON READER SERVICE CARD

Word Searcher

Atari power finds the winners

BY KEVIN PECK

A word search contest in my local newspaper inspired me to develop this program. Each week, a few of the names of the contest's 114 sponsors were hidden in a grid of letters. No clues were given about when any sponsor would appear, so it took a lot of trial and error to solve the puzzle. I decided that my Atari should do this dirty work for me.

Word search contests are fairly common newspaper promotions. So if you'd like your 8-bit Atari to put you ahead of the pack next time such a contest appears in your hometown paper, type in Listing 1, WORDFIND.BAS. Check it with TYPO II and SAVE a copy before you RUN it.

I have also provided two puzzles for you to try with the Word Searcher program. Listing 2, PUZZLE2.DAT, contains various Atari computer terms. Listing 3, PUZZLE3.DAT, has a variety of words. These listings are both included on the monthly disk.

Type in Listing 2 or 3 and check it with TYPO II. Then LIST it to disk or cassette. Type NEW to clear memory, LOAD Listing 1 and ENTER Listing 2 (or 3). This creates a ready-to-RUN program. When you are through with the first sample puzzle, repeat this process with the listing for the second sample puzzle. Be sure to save a copy of Listing 1 *without* any puzzles merged in, so you can use it with any puzzle you want.



With Word Searcher, just type in the letter grid from a word-finding contest grid, give your Atari the list of words to be searched, and the computer will find them in a flash. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

You can use Word Searcher with any printed puzzles, or with ones that you create yourself. Deciding if the program can handle the puzzle is simple. A puzzle grid can be no larger than 24 × 24 letters. (This is actually imposed by the screen size of the Atari, not memory space.) The word list can be any size.

PUZZLE DATA

The first DATA statement of your Puzzle Program *must* contain the width and height of the puzzle. In the first sample puzzle, the first DATA state-

continued on next page

ment reads DATA 24,24. The second sample puzzle is eight letters wide and 10 letters tall, so the first DATA statement reads DATA 8,10.

The next DATA statements contain the puzzle grid itself. Each statement must have the same number of letters as the width of the puzzle. And the total number of DATA statements must equal the height of the puzzle. Otherwise an error will be generated.

The following DATA statement will tell the program how many words to search for. The DATA statements after this contain the words themselves.

Do not type spaces within words. For example, one of the search words in the first sample puzzle is really two words: DISK DRIVE. But in the DATA statements it appears as DISKDRIVE.

If there are fewer words in the DATA than you have allowed for in the word count, the program will still search for the given number of words and then tell you it has unexpectedly run out of words. This causes no problems, but you should try to avoid it. If you have more words in the DATA than you tell the program, it just won't search for unaccounted-for words.

When you RUN the program, your grid of letters appears on the left side of the screen in a blue box. The right side has the command area. The top box displays the number of words found and missed so far. The next box contains the word being searched for. The third box is the message box, which says when a word is found, not found, too long for the puzzle, etc. The bottom box shows what keys to press when needed.

The cursor moves through the grid looking for the first word in the list, highlighting it in inverse video when found. You then can press either [START] to continue or [OPTION] to quit. You should now circle the word in the puzzle you're working on and then press [START] to continue with Word Searcher.

When the program finishes searching the entire word list, the background turns black and the word "Finished" appears in the command box.

If a word isn't found, either you've misspelled the word in the word list or a letter in the puzzle grid DATA is incorrect—or the puzzle you're using has a typo. The program will tell you it can't find a word and the screen will turn red. Exit by pressing [OPTION].

PROGRAM TAKE-APART

You might wonder how I got two colors on the screen in Graphics 0 and used them all over the screen. You've probably seen it done using display list interupts, but that only works for splitting the screen horizontally. The only way to split it horizontally in some places and vertically in others is to use Player/Missile graphics along with the normal screen display. I only needed three players to achieve the desired effect. And notice how the blue box surrounding the puzzle grid shrinks or expands to cover just the puzzle grid itself.

The smallest area a player needed to cover was an 8 x 8 pixel block, the size of one Graphics 0 character. I used double resolution players set to quadruple width. When all bits are set *on* in a player's data stripe, it covers eight characters on the screen—equal to one character width per bit.

(For learning more about Player/Missile graphics, two helpful books would be Ian Chadwick's Mapping The Atari *and Lon Poole's* Your Atari Computer.—ANTIC ED)

The program scans the puzzle, one letter at a time, starting with the upper left corner. When it finds a letter in the puzzle which matches the first letter of the word being sought, it checks the surrounding letters in the puzzle for a complete match.

Let's look at how the loops within the program perform this task. The I loop starting at line 270 is the main outer loop. It READs a word from the list and makes sure the word isn't too long to fit in the puzzle. Over-long words are printed in the command box.

The X and Y loops move the cursor through the grid, highlighting each letter as it scanned. This is done by using the LOCATE command to get the screen RAM value of the letter, adding 128 to set bit 8 on for inverse video and finally PLOTting the letter back to the screen at the same spot. You usually do not consider using the PLOT, LOCATE and other graphics commands in Mode 0, but they work here just as they do in any other graphics mode. For the commands to work properly, you must turn the cursor off beforehand by POKEing 752,1. Turn it back on with POKE 752,0 before exiting the program.

If the first letter of the search word doesn't match the letter at the current grid position then it skips the next set of loops and moves on to the next letter in the puzzle grid.

If the first letter *does* match the grid letter, the area around that grid position is searchd to see if the rest of the word is there. Here's where the DX and DY loops come in. These loops give nine possible values, of which eight are valid. The ninth value occurs when DX and DY are both 0, which means we're not going anywhere—so we skip over the subroutine call to the NEXT line and try the next valid set of values.

For each pass of the DX/DY loop pair we enter the subroutine starting at line 80, which makes sure the word will fit in the puzzle going in the direction indicated by DX and DY. If a 10-letter word is being searched and we're in grid position 18, then the word won't fit going to the right. There's no need to check anything else with this set of directions. We also perform the same check for vertical words.

If the word fits, we must check, character by character, against the grid in the current direction. As we look we will set each character in the grid to inverse video. No match means resetting all matched letters to normal video and exiting the subroutine. We then continue searching in the next direction.

If the check is successful, the user is informed of the find by a message in the command box and the screen turning green.

Kevin Peck is currently in college studying computer science. He has written various programs for business in Salina, Kansas.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **267** ON THE READER SERVICE CARD.

Listing on page 87

ATARI 520 ST/COLOR GAMES

FRACTALS: Generate amazing op-art like images in spectacular colors. Zoom in on the Julia curves by up to 100 million times by pointing and clicking! Travel in this beautiful space and enjoy an inexhaustible family of fractals. A typical fractal (131*161 dots) takes about 10 minutes to generate, but you can make pseudo-fractals in about 10 seconds!

MAZE: Develop and test your skills at showing the path through mazes. This program generates random mazes of six different sizes/complexities, and will show you the path if desired.

TINGO: You and your opponent alternate placing dots on a checkerboard to get five dots in a row. Play against a friend or the computer. The computer has six different skill levels, and will always respond immediately. A man versus artificial intelligence game!

BONGO: Find the hidden symbols/colors as in a battleship game. Test your reasoning/ deductive skills with this laid back teaser! 20 game modes.

CULTURE: You have to be fast and accurate using the mouse to prevent the Reds from taking over... 36 different game settings to challenge your eye to hand skills!

PRICING:

1 Program	$20.-
2 Programs	$35.-
3 Programs	$46.-
4 Programs	$54.-
5 Programs	$60.-

All of the programs are fully mouse and menu driven, and have a special demonstration mode to show capabilities and to entertain. They are written in Pascal for fast and robust operation. The executable code is supplied a low density floppy disk (3.5/SS/135TPI), and comes with a 3 month warranty. Archival copies allowed.

Order Today the Easy Way - by Mail! Programs not sold in stores!
Atari 520ST is a trademark of Atari Corp.

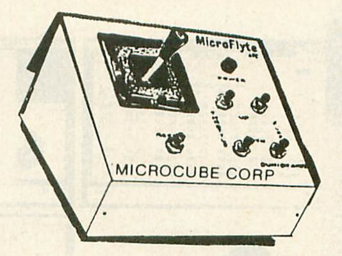
Please Check the Desired Programs...
( ) FRACTALS
( ) MAZE
( ) TINGO
( ) BONGO
( ) CULTURE

Mail to: Fred Buch
984G Kiely Blvd.
Santa Clara
CA 95051

Name: ____________________
Street: ____________________
City: ____________________
Amount Enclosed ____________________
State/Zip: ____________________

CIRCLE 023 ON READER SERVICE CARD

The MicroFlyte JOYSTICK



Increase your flying enjoyment with the Micro Flyte Joystick—the ONLY fully proportional continuously variable joystick control for Flight Simulator II.

Only **$59.95** (+ $4 shipping)

OUR USERS SAY IT ALL:

"...it transforms an excellent program into a truly realistic flight simulation system." B.A.C.E.

"FSII flies like the real thing with your joystick and software driver! Congratulations on bringing a superior product to the market." D.F.

"Simply put the MicroFlyte Joystick helps you 'fine tune' your flying." ANTIC

Driver Disk for F15 now available for $9.95.

NAME ____________________
ADDRESS ____________________
CITY/STATE/ZIP ____________________
CARD NO. & EXP. DATE ____________________

FSII is a trademark of Sublogic, F15 is a trademark of Microprose

SEND TO: MicroCube Corp., P.O. Box 488, Leesburg, VA 22075
(703) 777-7157

MasterCard VISA

CIRCLE 034 ON READER SERVICE CARD

We're the Leaders in Software Duplication

24 hour service
Tough quality control
Competitive prices

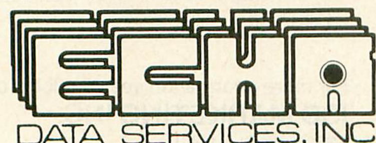
EXCLUSIVE !!
PEACE OF MIND copy protection now available for the ATARI 520 ST

WHOLESALE BULK DISKS

500 D/S Maxell 3.5" disks - $1.33 ea.

(similar savings on Sony, Nashua, and C.Itoh media)

CALL: 800-533-4188
or 215-363-2400 in PA.





A computer that uses time and date should keep the correct time and date.

The eSTe Clock keeps the time for the Atari 520ST and 1040ST.

Its CLK.ACC program sets the ST system clock when the power is turned on: Now all your new files are dated correctly. Software that uses the date gets the right date.

The eSTe Clock plugs into the cartridge slot. Its housing supports itself on the surface on which the ST sits and it is sturdy enough for you to lean on it. It can not be plugged in upside down.

Read about the eSTe Clock in Antic, December 86.

Introductory price $42

Price includes shipping within the 48 states.

P.S. Bigfoot is an orange and white tomcat with a great personality and very big feet.

CIRCLE 009 ON READER SERVICE CARD

Rainbow Screen Customizer

Flashy displays for your programs

BY JAMES HAGUE

Atari 8-bit computers are equipped with a palette of 128 vivid colors (Or 256 with a bit of programming gimmickry. See *GTIA Rainbow* in the March, 1984 **Antic**.) This is far more colors than most computers boast. Why then do Atari programs usually use only one or two colors, ignoring all that power? Because, in BASIC, it's difficult to have more than four colors on screen at once. To make matters worse, Graphics Mode 0 seems to be the most popular mode, and it's usually limited to three colors.

But now you can bypass these color barriers with user-friendly Rainbow Screen Customizer. This program lets you make each line of a Graphics 0 screen any of 128 distinct colors—allowing up to an amazing 24 colors in all, and that's not even counting the border. Rainbow Screen Customizer also generates a BASIC subroutine that will recreate your own 24-color screen in any BASIC program.

```
LOAD "D:SCREEN.BAS"

READY
LIST

10 REM SCREEN CUSTOMIZER
20 REM BY JAMES HAGUE
30 REM (c) 1986, ANTIC PUBLISHING
100 GOSUB 10000:POKE 752,1
105 POKE CTRL,0:POKE 709,10
110 POKE 710,0:? CHR$(125)
115 POSITION 11,4:? "GRAPHICS MODE ZER
O"
120 POSITION 11,5:? "SCREEN  CUSTOMIZE
R"
125 POSITION 7,7:? "programmed by Jame
s Hague"
130 POSITION 15,10:? "MAIN MENU"
135 POSITION 9,12:? "1 View/Edit Scr
een"
140 POSITION 9,14:? "2 Create Subrou
tine"
```

Rainbow Screen Customizer expands the color palette of Graphics 0 screens in your own programs to 24, instead of just the three colors usually available in this popular graphics mode. This BASIC programming utility works on all 8-bit Atari computers of any memory size.

HOW IT WORKS

Type in Listing 1, SCREEN.BAS, check it with TYPO II and SAVE a copy before you RUN it.

To edit the colors of a GR. 0 screen, choose option one, View/Edit Screen, from the main menu. Move the joystick until the arrow is on the line that you want to edit. (The text on the screen will not be saved with your finished product. It's only there to help you design your color pattern.)

Press [START] to select one color for that line from a possible 16, holding it down to cycle though the available colors. The [SELECT] key changes the luminance of the current line to one of eight brightness levels. [OPTION] selects the character luminance for the line, also allowing eight settings. When you are satisfied with your colorful creation, a quick press of the joystick button recalls the main menu.

There are a few things to be aware of about the color combinations available. First, setting both the character luminance and line luminance to the same value renders any text on tht line—including the arrow—invisible. Another important point is that the color of the characters cannot be chosen directly. Instead, the characters usually assume a shade relating to the line color. Except for these minor snags, you can mix and match colors to your heart's content.

USING CUSTOM SCREENS

A colorful screen is nice to look at, but what good is it unless you can spice up your latest programs with it? Imagine being able to divide the screen into separate horizontal color-coded windows, each having its own special function. For example, to

continued on next page

bring attention to a message area at the bottom of the screen in a word processor, you could color it a vivid red. Applications like this are the purpose behind this program.

Programming a colorful screen from scratch is not a task for the faint of heart, but with Rainbow Screen Customizer it's a snap. You don't even have to understand how it works, just how to use it.

To create a BASIC subroutine that allows easy access to your customized screen, choose option two, Create Subroutine, from the main menu. You will be asked to enter the line number in your main program where you want your routine to start, and the line increment. (Entering 1000 and then 10 would start the subroutine at line 1000, with the next line being 1010, etc.)

Finally, enter a filename for the subroutine. The file will be in LISTed format, so use .LST as the extender to remind you. Then insert a formatted disk of any density, press a key, and sit back and relax while your subroutine is created automatically.

Now exit the program by choosing option three and LOAD the program to which you want to add the subroutine. Then ENTER the file you just created. You now have a subroutine to create a custom screen included as part of your program. If you want to LOAD the subroutine into memory by itself, type NEW and then ENTER it.

To access the custom screens within your own BASIC program, just GOSUB to the first line of the subroutine. This will take about two or three seconds to set up, after which a brand new GR. 0 screen will appear with the colors you have chosen.

The custom screen is disabled whenever a GRAPHICS command is executed, but another GOSUB brings it back. Fortunately, the subroutine is "intelligent"—if it's called more than once, it will "realize" this and set things up more quickly.

While the custom screen is enabled, the color registers will have no effect, except for the one that controls the border. A pre-defined variable, CTRL, lets you easily enable and disable the multi-colored screen at will. POKE CTRL,1 turns the screen on and POKE CTRL,0 turns it off. When disabled, the entire screen takes on the characteristics of line 0, but the color registers are active again.

WHOOPS!

I have run into two minor glitches with this program. But if a colorful screen is what you need, these restrictions should be easy to work around.

First, the keyclick sound interferes with custom displays created by Rainbow Screen Customizer, making the screen shudder whenever a key is pressed, as well as making the click sound more like a quack. XL/XE owners can easily turn off the keyclick sound with POKE 731,255 and turn it back on with POKE 731,0. But 400/800 diehards don't have such an obvious solution. Probably the best way around it is to write a custom routine using memory location 764 to access the keyboard. But, on the other hand, the latest trend in programming is software that doesn't require the keyboard, so why not stick with your joystick?

The second problem is common to many programs involving machine language subroutines. The machine language used by this program, as well as data needed by it, is stored in a section of memory known as Page Six, which starts at location 1536. If you are using other pre-written machine language routines, make sure they don't occupy the same memory space.

With the Rainbow Screen Customizer you can create professional-looking BASIC programs that surpass the two-color displays found in many commercially available software packages. Of course, looks are just one part of a program, but they can make the difference between a mediocre piece of programming and one that is truly outstanding.

*James Hague's most recent **Antic** program was* Uncle Henry's Nuclear Waste Dump, *(December, 1986). He lives in Richardson, Texas and has been working in assembly language and BASIC for over four years.*

Listing on page 92 



PRACTICAL PROGRAM ★★ CONTEST ★★

First Prize Atari 1040ST Computer (Provided by Michtron)

Plus $500 worth of Batteries Included ST software

Three Runner-Up Prizes; Antic 1-Year Disk Subscriptions

Also, any entries (including prizewinners) accepted by **Antic** Magazine will be paid at our standard authors' rate, upon publication.

HOW TO WIN We are looking for the most powerful, versatile, easy-to-operate programs that perform useful jobs in the real world. The more uses for your software, the better. For example, a stuffed-animal database for taxidermists would probably be considered too specialized by the magazine's judges—no matter how excellently it is programmed.

The winning software must be user-friendly, most likely menu-driven wherever possible. Users should not need programming knowledge in order to successfully operate the application programs.

Please note that some of the other popular Atari program categories—such as utility routines that add power when inserted into your own programs—cannot properly be considered applications. Practical application programs should be complete, stand-alone software that does an entire user-controlled job from start to finish. For example, a drawing or painting program would be a practical application—a colorful graphics demo would not!

TECHNICAL RULES Programs must run on the Atari 800, 800XL and 65XE models and require no more than 48K memory. However, programs that *also* take advantage of the extra memory in the 130XE will be given preference.

Programs must be written in standard renumberable Atari BASIC or MAC/65 assembly language, under a disk operating system compatible with Atari DOS 2 or 2.5. Program listings cannot be larger than 150 sectors of a single-density disk.

Thorough error-trapping is very important. Your program should not crash every time a user accidentally presses the wrong key. And please do not include authors' copyright statements in your listing.

JUNE 15, 1987 All entries in the **Antic** 8-Bit Practical Applications Competition must be received by June 15, 1987. Winners will be announced in the November, 1987 issue of **Antic**. Judges' decisions are final.

Entries—programs and accompanying articles—should be submitted on disk *and* in printout. Entries will be returned only if the author provides a stamped, self-addressed envelope.

Send entries to:
Practical Applications Competition
Antic Magazine
524 Second Street
San Francisco, CA 94107

All 8-bit practical application programs accepted for publication by **Antic** between November 1, 1986 and June 15, 1987 will also be automatically evaluated as potential prizewinners in the contest.



Atari Views—clockwise from top left. 1. Neil Harris, Marketing Communications Director. 2. Aline LeFrancois, Senior Customer Relations Assistant. 3. Atari's main entrance. 4. (From left:) Mel Stevens, Creative Services Director; Neil Harris, Marketing Communications Director; Augie Liguori, Atari U.S. Vice President/General Manager. 5. Richard Frick, Director of Fortune 500 and OEM sales. 6. Carol Richter, Customer Relations Coordinator; Barbara Hambelton, Customer Relations Supervisor.
Photography by Mary Rhomberg Lavery

Today's Atari Corp.

A close-up look inside

BY NAT FRIEDLAND, ANTIC EDITOR

Readers of **Antic** have always been curious about what goes on inside the Atari company and how it develops new products. Now, for the first time, this valid curiosity can be satisfied. **Antic** editors were recently admitted into Atari headquarters and allowed to take photos anywhere in the building, and even to record conversations with engineers and programmers.

Strange as it may seem, this welcome for **Antic** to report on the entire Atari facility marked a historic first. The previous Atari management was quite secretive, to put it mildly.

For example, when **Antic** first began publishing in 1982, Atari Inc.—then a division of Warner Communications—was not immediately enthusiastic about this magazine printing the word "Atari" on the cover as an explanation of what computer we were publicizing.

Although **Antic** gradually developed accurate and detailed information "sources" inside the old Atari, we were never officially given any special consideration for advance information—even on technical topics which would only be of interest to hardcore Atari enthusiasts such as **Antic** readers.

During the heyday of the old Atari, around 1982, the company had approximately 10,000 employees worldwide and some 70 buildings all over Silicon Valley. The fastest-growing company in the history of American business, Atari dominated the international videogame market and grossed $2 billion in one year.

Today, after surviving the most spectacular losses in the history of American business, The Silicon Valley presence of Atari Corp. consists of a single Silicon Valley building with about 200 employees. Worldwide, Atari now has 1,000 employees and an assembly factory in Taiwan.

However, the company is still setting records. Atari is clearly "the Chrysler of high-tech, the biggest comeback story in the history of the computer industry"—exactly as predicted in the September, 1984 **Antic** (page 7). At this writing, Atari just went public for the first time with a stock issue that sold $51 million in one day.

THE NEW ATARI

When Jack Tramiel took over Atari in June 1985, with a team including many of his former Commodore management associates and his three sons, the flow of information steadily became freer. In mid-November 1985, the newly renamed Atari Corporation broke the ice with its first press conference—which included an exclusive **Antic** interview (February 1985, page 72)—announcing that the 130XE and the 520ST would be unveiled at the January 1985 Consumer Electronics Show.

Antic even got a private preview of the new computers the day before they were shipped from Silicon Valley to the CES (April 1985, page 17). But although the new Atari management team was a lot more accessible than the previous executives had ever been, they still left no doubt that developing the new Atari computer models and establishing them in the marketplace was a much more urgent priority than telling Atari's story via the press.

But now, with the success of the ST and XE computers an established fact, Atari has become more open than ever before. For the first time, **Antic** was permitted to use cameras and tape recorders throughout the entire Atari building—although we did agree in advance that we wouldn't photograph incomplete products if re-

continued on next page

quested by Atari. The following is a report of what we saw and heard at today's new Atari Corp.

ON TO SUNNYVALE

Low, wide and modernistic, 1196 Borregas Avenue used to be one of the *two* Atari headquarters buildings on this street in Sunnyvale. It is surrounded by a vast tract of similar high-tech company buildings that are typical of Silicon Valley's corporate architecture.

Sunnyvale is just about at the center of Silicon Valley, which is generally considered to extend from San Jose to Palo Alto, roughly 40 miles south of San Francisco. This section of Borregas Avenue dead-ends into Highway 101, Silicon Valley's main expressway, just south of Moffett Air Force Base with its giant hangars and the "Blue Cube" center for electronic tracking of satellites.

Turning into the parking lot at the Atari sign, about one block from Highway 101, I pull into a visitor's space and meet **Antic** ST Program Editor Patrick Bass in the lobby. The front desk is manned by a receptionist and a security guard. We sign the log-in sheet and are issued visitor's badges.

Our guide arrives, Neil Harris, Atari's Marketing Communications Director (See the February 1987 **Antic** article, *Atari's Own BBS*). After Neil okays our entry with camera and recorder, we follow him through a double door into a sprawling, airy workspace full of employees at desks and modular workstations. "This is a typical Jack Tramiel open work area," comments Harris. "He doesn't like to have employees separated by a lot of little office cubicles."

Harris's office is at the far end of this wing. En route we pass a series of wall maps of the U.S. and the world, with color-coded pins marking the locations of Atari users groups, scheduled Atari Fairs, national and overseas distributors and sales offices.

Neil shows off his advance model of the Print Technik video digitizer. **Antic** has been receiving reports of this super-sharp digitizer from European trade shows for months, but this is the first unit we have seen in the U.S. Harris has a videocamera set-up by his ST and he takes a headshot of me sitting in front of his desk. (When the disk of this portrait is brought back to **Antic**, Patrick and the technical staff use DEGAS Elite to convert it into a Monty Python cartoon. Very clever, indeed. Too bad the perpetrators are all fired!!)

Next door to Neil's office is the oversized closet that houses the Atari Base bulletin board with its five sets of 520STs, hard disks and modems. Across the way is the desk of Atari Users Group Coordinator Sandi Austin. "Most of the people in this part of the building are in Marketing or they work for Diana Goralczyk in Customer Relations," says Harris. Customer Relations phones are (408) 745-2367 or (408) 745-5759.

We walk through this wing and into the equally large work area on the opposite side of the lobby, where the Accounting Department is housed. Throughout this floor, it is striking how many STs are in use on people's desks.

"ST computers have pretty much replaced terminals, telexes and other micros throughout the company," says Harris. We use dbMan for our order processing database in customer service inventory. STs track the sales for our executives like Mike Katz, Sales-Marketing Vice President; Augie Ligouri, the U.S. General Manager; Ian Kennedy, our General Manager in Canada. Atari secretaries use ST Writer for word processing. Greg Pratt, the Finance Vice President, uses the VIP Professional spreadsheet. We're replacing all our mainframe terminals with STs—using either Atari's new DEC VT100 Terminal Emulator Cartridge or PC InterComm software from Mark of the Unicorn."

Another striking fact about Atari's in-house equipment is how many laser printers are in use. A variety of different brands are on desktops and the laser units almost seem to have replaced dot-matrix and daisywheel printers at Atari. "We've found that two of the best buys in laser printers right now are the Quadram Quadlaser and the Canon LBP-82," says Harris. "We use them in Epson or Diablo emulation mode."

At a rear corner of the downstairs floor is the Creative Services Department, where the various Atari manuals and package designs are developed. We are enthusiastically shown a powerful, new, enhanced version of the NEOchrome paint program for the ST.

R&D UPSTAIRS

Atari's upper floor is the tour stop that will be of most interest to the majority of **Antic** readers. This is where Atari's engineers and programmers work on forthcoming products.

Coming up the rear stairs, the first thing we see is a prototype 3-piece computer. The keyboard is simply a mockup with individual ST keys stuck into a big sponge pad. The computer is in a separate closed box with a detached video monitor—the standard IBM-type arrangement. On top of the computer box is what seems to be a schematic diagram showing open slots for add-on boards.

"You need to understand that we experiment with a lot of prototypes up here that never make it to market for a variety of reasons," says Harris. "We won't talk about anything you might see on this floor unless Atari is reasonably committed to a release date for it."

Nearby are units that underline Neil's warning. One example is a rare PS3000, an ST color monitor with a built-in disk drive. About 1,000 of these experimental monitors actually were manufactured and sold through specialty computer retailers. We also see a prototype 1040ST with a 10-megabyte hard disk built in. Called the 1040STH, this version is not going to be released.

We move on to meet Atari's three-person final testing group. They use video recorders to keep track of exactly where new software crashes. The team is currently working on the Microsoft Write word processor. As we see it on the ST monochrome screen, the program looks fast and detailed, with a true WYSIWYG (what you see is what you get) graphic display. We are told that Write is a port

of Microsoft Word, in current Macintosh version 1.05, and it will support most popular laser and dot-matrix printers.

We see some of the new 8-bit products that are due in 1987. There's the SX212 Hayes-compatible 1200 baud modem which is to sell for $99.95. We also see the sharp, clear text display of the XEP80 plug-in 80-column card ($79.95).

As we walk by the equipment-crowded worktables, we see a lot of large, strange circuit boards featuring chips marked 68020. The Motorola 68020 chip is widely rumored to be the microprocessor for an upcoming Atari 32-bit computer which would support the Unix operating system.

Harris is more willing to talk about some of the other offbeat boards we see. Here is the original hand-assembled circuit board for the first prototype ST. "Unfortunately, a lot of the chips have been taken out for other projects," says Neil. "This board really should be left the way it was, as a piece of history."

Another curiosity is a cumbersome board that shows what ST circuitry would look like if it was designed on the same logic principles as the Macintosh. Atari engineers put it together as a joke. Patrick gets Harris to pose with the clumsy item. "Hurry up and take the picture," Neil says. "The whole bottom of this board is like a pincushion, you can't hold onto it without getting stuck."

Shiraz Shivji, Atari's Vice President of Research and Development, is having an impromptu hallway meeting. There's Landon Dyer, one of the programmers of TOS, and John Feagans, who is working on a new GEM version of the ST Writer word processor. We hear that the arcade hits Crystal Castle and Battle Zone are coming soon in ST versions.

When we ask about the hallway posters claiming that the Intel 820386 is a "stupid" chip, the technical staffers insist that the Motorola 68020 chip being worked with by Atari is faster and more powerful than the 386 which is going into the next generation of IBM-compatible computers.

It's a surprise to run into Dennis Friedman, who visited **Antic** several times while working for Atari in France. Dennis tells us he is based in Sunnyvale now and his current project is the second edition of the International ST Software Catalog. "It will be twice as big as the first edition," he says.

In a rear office we meet Jim Tittsler, who is putting the finishing touches on the ST's IBM emulator box. As he discusses the complexities of IBM vs. ST disk formats, we learn that the box is to be an add-on to the DMA port. It will support the IBM 5 1/4 and 3 1/2 inch disks as well as the Atari 3 1/2 inch format. The estimate is that the emulator will run most MS-DOS software as fast as an IBM, in some cases faster.

Jack Tramiel's office is in a front corner. It's about the only office in the whole building that can be considered comparatively large. The room is currently empty, as the Chairman is looking after Atari business elsewhere in the world.

Down at the other end of the hall, Atari President Sam Tramiel has a full crew meeting in his office, including Richard Frick, Director of Fortune 500 and OEM sales; John Skruch, Associate Director for Computer Software; and Claude Nahum, General Manager of Atari in Spain. Tramiel is just passing through town during a short hiatus in a series of investor meetings preparing for the Atari stock offering. He mentions that Atari is recruiting programmers for the revived videocartridge machines, particularly the 2600.

SOFTWARE VP

We learn that Leonard Tramiel, Vice President for Software, is now in charge of third-party as well as in-house software development. He has taken over from Executive Vice President Sig Hartmann, whose new assignment is to establish the ST with Fortune 1,000 companies and add-on value manufacturers as an affordable combination of high-powered workstation and mainframe terminal (with the VT100 emulator cartridge).

Leonard agrees to join us and answer some questions. As we pass a fast-moving animated display utilizing the upcoming blitter chip, he explains that current ST owners will be able to obtain the blitter chip upgrade for about $120. The upgrade will include a new set of TOS ROM chips.

Also coming soon is a new revision of ST BASIC from MetaComCo. The revised BASIC will feature additional commands and faster processing, along with direct control of AES, VDI, BIOS, XBIOS and GEMDOS. The same program will be able to run with or without the blitter chip.

We bring up an idea **Antic** had for a photo-essay showing every step in the manufacture and marketing of a single Atari computer. "Sorry, we couldn't allow any photographing inside the Taiwan assembly plant," Leonard responds. "Atari's facility is highly automated and our competitors would love to have a look at the robotics."

Patrick Bass asks about TOS error messages and gets a confirmation from Tramiel that error number 35 is a general error message which is given when the ST can't figure out anything more specific that's wrong.

GDOS ARRIVES

Probably the most exciting new information Leonard tells us is that GDOS (Graphics Device Operating System) is now shipping to independent developers for use in new software. GDOS is already incorporated into DEGAS Elite.Software using the GDOS Normalized Device Coordinates will map its displays on an ultra-high-resolution grid of 32,767×32,767 pixels. This output will then automatically display or print out at the highest resolution available to whatever device the ST is connected to.

This makes GDOS a crucial tool for keeping the ST at the forefront of fields such as graphics and desktop publishing. As new video screens and laser printers with finer detail come to market, the ST's output will automatically adapt to the best quality that can be produced by these new devices.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **249** ON THE READER SERVICE CARD.



I SHOULDA HAD A #/?$! BACKUP.

How many times have you lost valuable data files because you skipped the tedious task of backing up your hard disk?

Now, you can have a "piece of mind" with Supra Corporation's streaming tape and backup software.

SupraStreamer Tape Backup

Only $799.

- 40MB STREAMING TAPE BACKUP
- 900KB/MINUTE BACKUP RATE
- USES STANDARD CARTRIDGE TAPES
- INCLUDES SupraSure HARD DISK BACKUP UTILITY



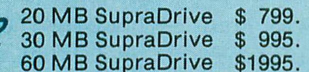
SupraSure Hard Disk Backup Utility

Available Seperately $49.95

- WORKS WITH FLOPPY DISK OR STREAMING TAPE BACKUP
- 3-9 TIMES FASTER THAN USING TOS SYSTEM COPY
- INCREMENTAL BACKUP/RETRIEVE BY ANY COMBINATION OF THE FOLOWING:
  - FILE TYPE
  - FILE DATE
  - TIME OF LAST FILE MODIFICATION
- IMAGE BACKUP
- ALLOWS BACKUP OF ANY SIZE FILE

This software is so fast and easy-to-use that you can be **SupraSure** that you will always have a current backup of your hard disk. **SupraSure** can backup data from your hard disk to the Supra Streamer tape backup system or floppy disk. You can do a complete backup of the entire hard disk (Image Backup) or selectively choose files by TYPE, DATE, TIME, or any combination of these. For example, you could do an incremental daily backup of new data files by simply selecting the current DATE and .DAT for the file type. SupraSure will then find all of the selected files and save them to tape or floppy disk. You can also restore files onto your hard disk selectively with combinations of these file identifiers. SupraSure also allows you to create a script to automatically select the files for each backup.

SupraDrive Atari ST Hard Disk



20 MB SupraDrive $ 799.
30 MB SupraDrive $ 995.
60 MB SupraDrive $1995.

Available at your local dealer, or call:

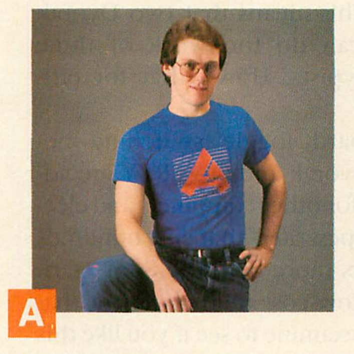


Supra Corporation
1133 Commercial Way/Albany, OR 97321
(503) 967-9075-Orders
(503) 967-9081-Technical Support
Telex: 5106005236 (Supra Corp.)

QUICK, EASY, & AFFORDABLE INSURANCE.

CIRCLE 068 ON READER SERVICE CARD

Wear It Out!



A

T-SHIRTS. This Official Antic T-Shirt is worn by many of our staff. Made of cotton and polyester to hold their shape and good looks. Blue only. S–M–L–XL



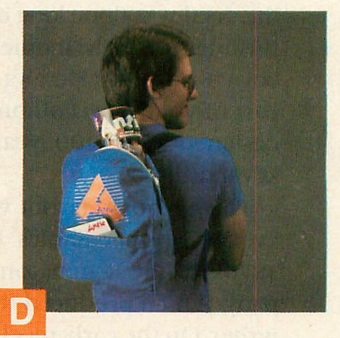
B

SWEATSHIRTS. For the cooler days this sturdy sweatshirt is made of cotton and acrylic for warm comfort and perfect fit. Blue only. S–M–L–XL



C

CAP. The Publishers special! This beautiful all-cotton cap is fully adjustable to fit you perfectly and is a favorite of the Publisher of Antic. Blue only. One size fits all.



D

BACK PACK. For your disks, printouts, school books and lunch. This 100% nylon pack has a zippered top, velcro front pouch, and adjustable straps.

RUSH Today To:
Logo/Antic
1380 Piper Drive
Milpitas, CA 95035

Name ____________________

Address ____________________

City ____________________

State __________ Zip __________

(Please allow 8–10 weeks for delivery in U.S.; Foreign orders up to 3 months.) NOTE: Foreign orders payable in U.S. dollars by International Money Order. Foreign shipments may be subject to additional shipping charges.

Please send me the following items that I've marked below:

Qty.	Item	Size (S–M–L–XL)	Price each	CA Tax each	Post. & Hand. each	Total each
	A. T-Shirts		**$ 6.50**		2.00	
	B. Sweatshirts		**$12.00**		2.50	
	C. Backpacks	—	**$ 9.50**		2.25	
	D. Hats	—	**$ 5.50**		1.50	

TOTAL ENCLOSED __________

GUARANTEE: Any item may be returned in perfect condition within 10 days for full refund.

Dvorak Keyboard

Turbo typing for Atari

BY DAVID YEARKE

Try out a version of the speed-typing Dvorak keyboard on any 8-bit Atari computer of any memory size, with disk or cassette. This BASIC program offers an alternative to the standard QWERTY keyboard—which was actually designed to slow down the pioneering generation of touch typists.

Believe it or not, part of your computer was designed to be as slow and inefficient as possible. No, don't blame Atari—the deed was done long before Nolan Bushnell or Jack Tramiel were even born. Confused? Here's a clue: it's the part of your Atari computer that was designed over 100 years ago—the keyboard!

The keyboard layout was invented by Christopher Sholes in the early 1870s for the Remington Arms Company, which produced the first typewriter. On the early mechanical typewriters, keys tended to jam when struck too rapidly. To overcome this, Sholes designed the QWERTY layout which is commonly used today throughout the world.

Sholes slowed down typists by making sure that the most commonly used letters were spread all over the keyboard, and that frequent combinations of letters, such as "ed," had to be struck with the same finger.

It may have been all right to slow down typists in Sholes' time, but today's electronic typewriters don't jam. So the reason behind the QWERTY system no longer applies. Fortunately, we have an alternative.

DVORAK'S IDEA

In the 1930s, Professor August Dvorak studied the typewriter and concluded the Sholes layout was not only cumbersome, but that even a random arrangement of keys would be more efficient. He studied the keyboard and people's typing habits, and devised a keyboard arrangement that gave what he felt was the best possible speed and efficiency.

Why is the Dvorak layout better? First of all, it involves less physical movement. He computed that a Sholes typist's fingers move an average of 16 miles a day, compared with a single mile for a typist using Dvorak. This improvement makes Dvorak not only less fatiguing, but faster as well. The average speed of a Sholes typist is about 40 words per minute (wpm), compared with 60 wpm for a Dvorak typist. This means that two Dvorak typists can do the work of three Sholes typists. How's that for efficiency?

Keyboard toggle switching between Dvorak and QWERTY are advertised for other computers and electronic typewriters that cost hundreds of dollars more than the 8-bit Atari. Here's a low-cost alternative, one that you can examine to see if you like this typing system. The Dvorak layout finally seems to be catching on, and your new-found skills as a Dvorak typist could come in handy.

NOTE: The Dvorak Keyboard pro-

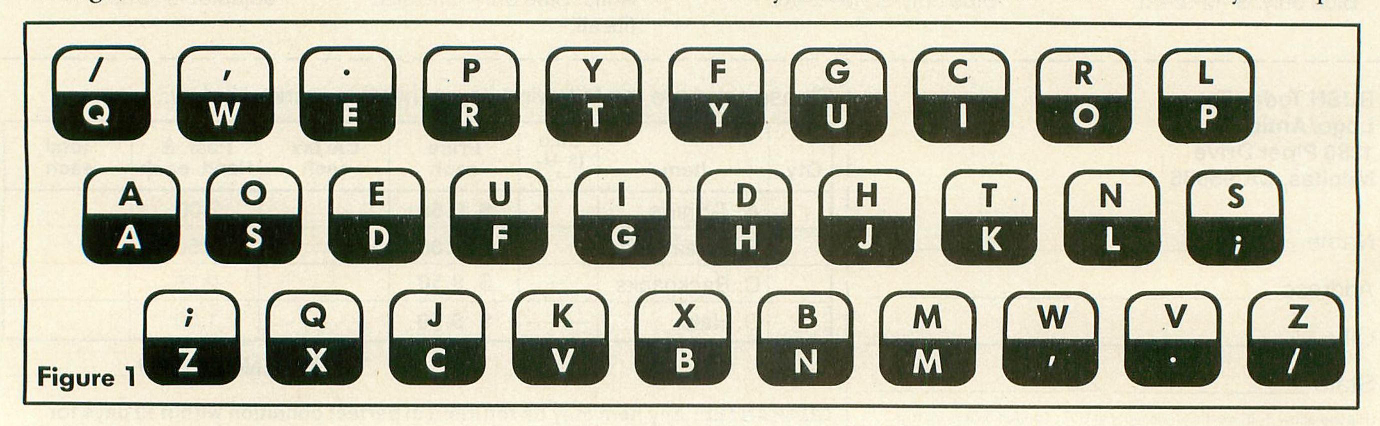


Figure 1

gram has been used sucessfully with cartridge software such as AtariWriter, MAC/65 and BASIC (built-in BASIC too). It does *not* work with PaperClip or most other disk-based software. (*Please send the I/O Board your own discoveries about software compatibility with this program.*—ANTIC ED)

DVORAK FOR ATARI

Figure 1 shows this modified Dvorak layout as implemented on the Atari. The top characters (black letters on white background) are the Dvorak Keyboard. The bottom characters (white letters on black background) are the standard QWERTY arrangement.

I didn't change the existing positions for the cursor keys and Atari special symbols. But I changed the position of some punctuation marks. For example, the slant bar [/] which Dvorak placed on the equal key [=] I've moved to the [Q] key. And I moved the quote character ["] from the [Q] key back to the [2] key, as on the Atari's QWERTY layout.

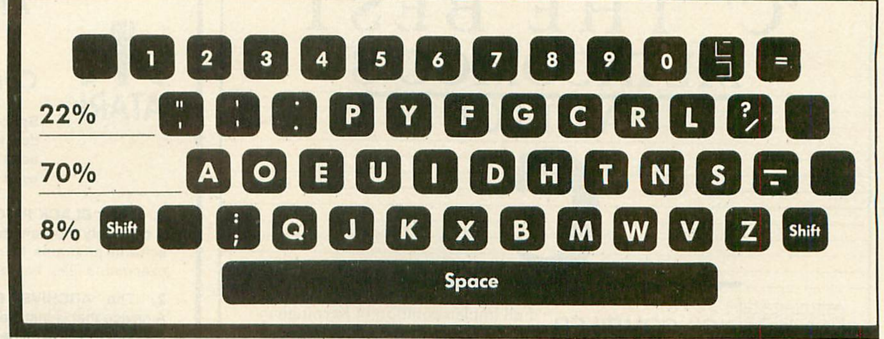
I also opted for the "modified" Dvorak keyboard, in which the numbers are kept in sequence, as opposed to Dvorak's order of "7-5-3-1-9-0-2-4-6-8." I saw little advantage—and *lots* of confusion—in using his arrangement.

Notice that all the vowels and the most common consonants are located on the middle, or "home" row, where a typist's fingers are at rest. This is the key to Dvorak's speed. With the Sholes layout, only about 100 common English words can be formed using the home row, compared to over *4,000* words with Dvorak. Eliminating that half-inch that a finger must travel to hit a common letter really adds up.

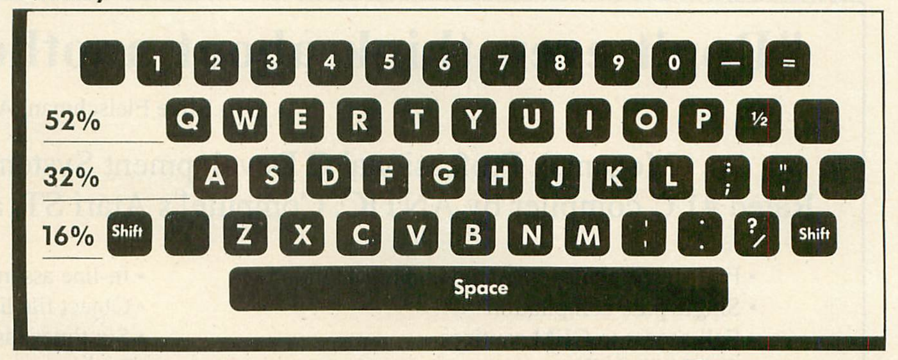
Dvorak also made the workload of each hand more even. With the Sholes arrangement, the left hand works harder than the right, and left-handed typists are often faster than right-handed ones.

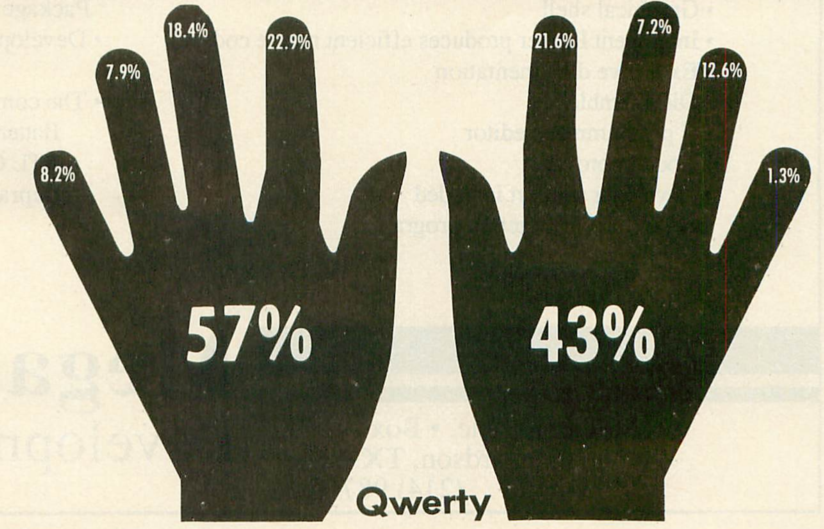
Finally, by putting the common letters on the home row, he has eliminated the phenomenon know as a "hurdle," where the same finger must

continued on page 40









BY MATT LOVELESS AND MIKE EGGERS

Page 6 Grab-Bag

Punch up your program with these useful routines

Plug one of these short but powerful USR routines into your own BASIC programs to create a Joystick Enhancer or a Console Key Expander that operate at assembly language speed. You do not need to know assembly language to use the routines. The BASIC programs work on all 8-bit Atari computers of any memory size, with disk or cassette.

After you are familiar with Atari BASIC, what next? Assembly language is the next logical step. Fortunately your Atari offers a bridge between these two languages—the USR (USeR) function. This function lets the programmer call fast, powerful machine language routines from a BASIC program.

To smooth the transition between BASIC and assembly language even more, Atari also has a "protected" area of memory known as Page 6. Page 6 occupies 256 bytes of memory from location 1536 to 1791 (0600 to 06FF in hexadecimal). And it is left untouched by the operating system and BASIC.

During the coming months, **Antic** will be presenting a number of short but effective Page 6 utility routines which were originally released in 1982 by Synapse Software. You do *not* need to know assembly language. Just type in these useful tools and make your programming sessions more productive.

Figure 1

JOYSTICK EXPANDER

Our first routine, Joystick Expander, greatly reduces programming effort. It lets you use a simple ON . . . GOTO instruction to handle the different joystick directions.

When Joystick Expander is used in your program, the values returned from a STICK(X) function will not be the standard ones. A centered joystick will return 0, forward returns a 1. (See *Figure 1*.) The values increase by one in a clockwise direction, with the forward/left combination returning 8.

To use Joystick Expander in your own program, type in Listing 1, JSTICK.LST, checking it with TYPO II. You do *not* need to type in Listing 2, JSTICK.M65, which is the assembly language source code (for MAC/65 or Atari Assembler/Editor) provided for the information of assembly language programmers. After you have an error-free copy of Listing 1, remove the TYPO II program and LIST JSTICK.LST to disk or cassette. Now, LOAD (or type in) your own program and then type ENTER "D:JSTICK.LST". (Cassette owners substitute "C: for "D:). This will merge JSTICK.LST with your program.

Make sure that your own program does not have any lines numbered higher than 30000, or they will be replaced by the Joystick Expander. Somewhere near the beginning of your program include the line below. (Change the sample line number, if needed)

101 GOSUB 30000:JUNK=USR(1536)

The USR call only needs to be made once. Thereafter, any joystick readings will produce the new values.

CONSOLE ENHANCER

This month's second routine is a useful Console Key Enhancer. With this routine in place, you will double the number of possible values that can be returned from your console keys—[OPTION], [SELECT] or [START]. Normally, a statement such as Y=PEEK (53279) would indicate which key was pressed.

Using the Console Key Enhancer, you can also detect the [SHIFT] key used in combination with the console keys. You can even "latch" these key values, so they are remembered after the keys are released.

Type in Listing 3, CONSOLE.LST, checking it with TYPO II. Follow the instructions about LISTing and EN-

continued on next page

DVORAK KEYBOARD
continued from page 37

travel from the top row to the bottom (or vice-versa)—"hurdling" over the home row. There are over 1,200 common English words with multiple hurdles, such as the word "number," where the first three characters are struck with the right index finger. Hurdles are a common cause of spelling errors, because fingers tend to get "lost" while hurdling.

DVORAK DISCLAIMER

Despite the improved efficiency of the Dvorak Keyboard, it is not easy to switch to Dvorak typing if you are already accustomed to touch-typing with the QWERTY layout.

In fact, the difficulty of retraining typists who use the vast installed base of QWERTY keyboards is the main obstacle to widespread acceptance of the Dvorak layout. When your QWERTY-trained subconscious mind tells you to press an [F] key and you get a Dvorak [U], this can be a very disorienting experience—not unlike pressing the Coke button on a vending machine and receiving a handful of bubblegum.

To help preserve your sanity as you experiment with an Atari Dvorak Keyboard, you should photocopy *Figure 1*, cut apart the individual key guides and *lightly* glue them on top of your three rows of letter keys. (Or at least keep the diagram very close to your computer.)

Press [CONTROL] [4] to toggle back and forth between Dvorak and QWERTY typing. [CONTROL] [5] toggles one-key cursor movement on and off—in either Dvorak or QWERTY mode—allowing you to move the cursor without having to hold down [CONTROL]. To get the characters [-], [=], [+], and [*] hold down the [CONTROL] key when pressing the appropriate key.

HOW IT WORKS

The Dvorak Keyboard program replaces the built-in keyboard handler of any 8-bit Atari computer. In normal Atari keyboard use, whenever you press a key an interrupt is generated by the POKEY chip. The operating system looks to location $0208 for the location of the keyboard handler routine. This program replaces the handler in your computer, taking the code for the key you pressed and looking it up in a table to find the Dvorak equivalent.

Type in Listing 1, DVORAK.BAS, check it with TYPO II and SAVE a copy before you RUN it. Listing 1 will create a file called DVORAK.EXE on your disk. Antic Disk owners will find DVORAK.EXE on the Main Menu. Copy this file to another disk (which contains DOS 2.0 or 2.5) and rename it AUTORUN.SYS.

To start typing Dvorak-style, turn off your computer and reboot with the new disk. You won't notice anything different except that you have about 500 fewer bytes of available memory than before. Dvorak Keyboard continues working even after you press [RESET], so you'll need to turn off your computer to remove Dvorak from memory.

I removed the routine that processes function keys 1-4 on the 1200XL, which saved 105 bytes. Listing 2, the source code created with MAC/65, is included to show how the program works.

You will probably notice that in Dvorak or one-touch cursor modes the auto-repeat function is disabled. This is because because the logic for that function is contained in the Vertical Blank routine and reads the hardware location directly, instead of the RAM shadow register, which is the one I changed. To avoid having this program larger than I wanted it to be, I opted to turn off the auto-repeat rather than rewrite the VBLANK routine. However, auto-repeat still works in normal mode.

*Dvorak typing implementations have long been a staple of Atari public domain software, but **Antic** liked David Yearke's clean programming and informative article when we saw it in POKEY, the newsletter of the Western New York Atari Users Group. So we asked Yearke, a resident of Cheektowaga, New York to expand his piece for this issue.*—ANTIC ED

Listing on page 89

PAGE 6 GRAB BAG
continued from page 39

TERing programs, which were explained above for the Joystick Expander routine. You do *not* need to type in Listing 4, CONSOLE.M65, the assembly language source code.

Add the following line to your own program, changing the line number if necessary. This routine only needs to be called once, unless you switch in or out of latch mode:

```
101 GOSUB 31000:
BUTTON=USR(1536,CMD)
```

Note that we are passing a second parameter to the routine. The variable CMD can have one of three values—0 to turn OFF the enhancer, 1 to turn it ON, or 128 to turn on the enhancer and latch the last key pressed. Now. whenever you wish to read the console keys, do a PEEK(BUTTON) instead of a PEEK(53279).

Refer to the following table to see the values you may expect:

Normal	Enhanced
No press = 7	No press = 0
[START] = 6	[START] = 1
[SELECT] = 5	[SELECT] = 2
[OPTION] = 3	[OPTION] = 4
n/a	[SHIFT]-[START] = 9
n/a	[SHIFT]-[SELECT] = 10
n/a	[SHIFT]-[OPTION] = 12

TECHNICAL NOTES

This article does not provide extensive technical explanations of the two routines, but the assembly source code is well documented and should provide interested readers sufficient information to understand how they work. These source programs can be assembled on either the Atari Assembler/Editor cartridge, or MAC/65 from Optimized Systems Software.

IMPORTANT: Because the Joystick Expander and the Console Key Enhancer run from the same part of Page 6, you should only use *one* of them in any program. For example, if you're using the joystick routine and decide to add any other routine which uses Page 6, the Joystick Expander will be over-written.

Cousins Matt Loveless and Mike Eggers were both in their mid-teens when Page 6 was originally released on disk by Synapse Software in 1982.

Listing on page 93 

ARTICLE BY DAVID PLOTKIN

New Owners Column

PROGRAM BY CHARLES JACKSON

Lesson 12: Graphic Modes

This series teaches beginners how to program in BASIC on all Atari 8-bit computers such as the 800XL and 130XE. The lessons began in the March, 1986 issue.

Computer graphics are great fun, and also an area where your Atari is really outstanding—even in comparison to more expensive machines. In this lesson, we will introduce the Atari's **graphics modes**, an essential subject for understanding how to create colorful visual displays.

Your Atari can display visual information onscreen in various different modes (ways). You get at least 12 different ways to show information in a simple **GRAPHICS** command, such as:

10 GRAPHICS X(where X is any whole number between 0 and 11)

MEET THE MODES

Graphics Mode 0 (GR. 0) is the familiar blue screen seen when you turn on the computer. It displays 24 lines of 40 characters each. Two colors are normally displayed, the background color and the text color.

Graphics 1 (GR. 1) displays 24 lines of 20 characters that are twice as wide as those in GR. 0. This mode displays only capital letters, but it can display them in four different colors. Including the background color, you can normally put five colors on the screen at once in GR. 1. For a sample of text in GRAPHICS 1, type:

10 GRAPHICS 1:POSITION 1,1: PRINT #6; "HeLlO AnD wElCoMe"

Type GRAPHICS 0 and press [RETURN] to get back to the regular screen.

Graphics 2 is similar to GR. 1, but with 12 lines of 20 characters. Thus characters in GR. 2 are both twice as high *and* twice as wide as those in graphics mode 0. This mode is also capable of five colors. Try this:

10 GRAPHICS 2:POSITION 0,1:PRINT #6; "WeLcOme To #11"

TEXT MODES

Graphics Modes 0, 1 and 2 are the text modes, where information is put on the screen as text. In Graphics Modes 3 through 11, information is entered as colored dots. The difference between these modes is the number of colors available and the **resolution**—how many dots will fit on the screen.

In general, as the graphics mode number increases, the resolution and/or number of available colors also increases. However, the memory requirement also increases. This table gives the requirements of the various GRAPHICS modes:

GR. Modes	No. of colors	Resolution (width × height)	Memory (Bytes)
Text			
0	2	40×24	992
1	5	20×24(-4)	672
2	5	20×12(-2)	420
Graphics			
3	4	40×24(-4)	432
4	2	80×48(-8)	696
5	4	80×48(-8)	1176
6	2	160×96(-16)	2184
7	4	160×96(-16)	4200
8	2	320×192(-32)	8138
9	16	80×192	8138
10	9	80×192	8138
11	16	80×192	8138

You can see the trade-offs among resolution, number

of colors and memory requirements. For example, GR. 4 has the same resolution as GR. 5 but needs only half the memory and can produce only half the colors. Modes 9 and 11 can produce 16 colors at once, yet they need the same amount of memory as GR. 8, which has only two colors. The trade-off is resolution. mode 8 can display 320 tiny dots across the screen, whereas GR. 9, 10 and 11 can only display 80 larger dots.

Graphics Modes 3, 5 and 7 each are capable of four colors—one background color and three "dot" colors. GR. 4 and 6 are capable of only two colors: the background color and one dot color.

In GR. 8, although two colors are possible, you have much less control over what they are. The dot color is the same as the background color, but with a different luminance (brightness). For example, if the background is black, the dot color could then be anything from white through shades of gray to black. Of course, if you make the dot color black, you'd be unable to see the dots against the black background.

Graphics 0 shares this limitation regarding to color selection. GR. 9 and 11 can display 16 colors at once, but again there are certain constraints on the colors you can select. GR. 9 lets you choose one color, and the others will be 16 shades of the color selected. GR. 11 lets you choose one luminance and can display all 16 colors in that selected shade. Finally, GR. 10 allows nine colors, which can be anything you like.

VARIATIONS

When you ran the examples for GR. 1 and 2, you noticed that the top part of the screen was black, while the last few lines (equal to four lines of GR. 0 text) were still blue. This arrangement, with a large graphics section at the top of the screen and a small "text window" at the bottom is typical for GR. 1-8. To get rid of the text window and have an all-graphics screen, add 16 to the number you call in the GRAPHICS command. GRAPHICS 7+16 or GRAPHICS 23 produces GR. 7 with no text window:

10 GRAPHICS (7+16)

The screen heights listed in the table above are for the "no text window" case. If you want a text window, the available height of the screen is reduced by the number in parentheses. For example, in GR. 7 a text window reduces the available height of the screen from 96 to 80.

You'll also notice that the screen is cleared when you use the GRAPHICS command. Normally this is what you want. I don't think I've ever used the GRAPHICS command without wanting the screen cleared. But if you ever want the data left on the screen, just add 32 to the number in the GRAPHICS command. The following line delivers GR. 1 without the screen clear. GRAPHICS 33 also works:

10 GRAPHICS (1+32)

You may add *both* 16 and 32, so that you have no text window *and* the screen is not cleared. As long as there is a text window, the word READY will appear at the bottom of the window when a program finishes running. An advantage to this is that you can look at whatever you have put in the upper part of the screen for as long as you like. If you do a GRAPHICS command without the text window, the screen automatically returns to the blue GR. 0 screen when the program is completed. To prevent this, you can add a line such as:

20 GOTO 20:REM endless loop, press [BREAK] to end the program and return to GR. 0.

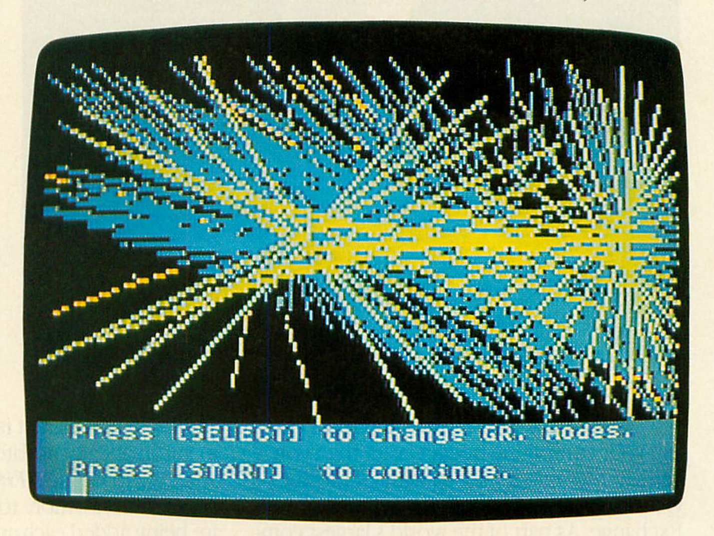
SCREEN POSITION

Since the *text* Graphics modes and the *graphics* Graphics modes are quite different, we will look at them separately. First we'll cover the text modes.

Below, the PRINT #6; tells the Atari to put the text in the upper (normally black) part of the screen. If you just use PRINT, the text will be displayed in the text window. Try this:

10 GRAPHICS 1:PRINT #6;"THIS IS THE GRAPHICS PART";

20 PRINT "THIS IS THE TEXT WINDOW";



To specify where in the *upper part* of the screen you want the text, use the **POSITION** statement in the form: POSITION X-coordinate, Y-coordinate. Because computers count funny, the upper left corner of the screen is 0,0—not 1,1. So if the resolution of GR. 1 is given as 40×24, you can use any number between 0 and 39 for the X-coordinate and any number between 0 and 23 for the Y-coordinate. Going outside these ranges generates, naturally, a "cursor out of range" error.

The POSITION statement will not work to specify the position of the text in the *text window*. Instead you must POKE the X-coordinate into memory location 657 and the Y-coordinate into 656. The Y-coordinate is measured from the top of the *text window*, so the range of values for the Y-coordinate is 0 to 3:

10 GRAPHICS 1:POKE 657,3:POKE 656,1: PRINT "MOVE OVER IN THE TEXT WINDOW"

FOUR-COLOR TEXT

Getting four colors for letters is easy, if not straightforward. Normally only capital letters will print on the screen. If you use a PRINT #6 statement containing capitalized

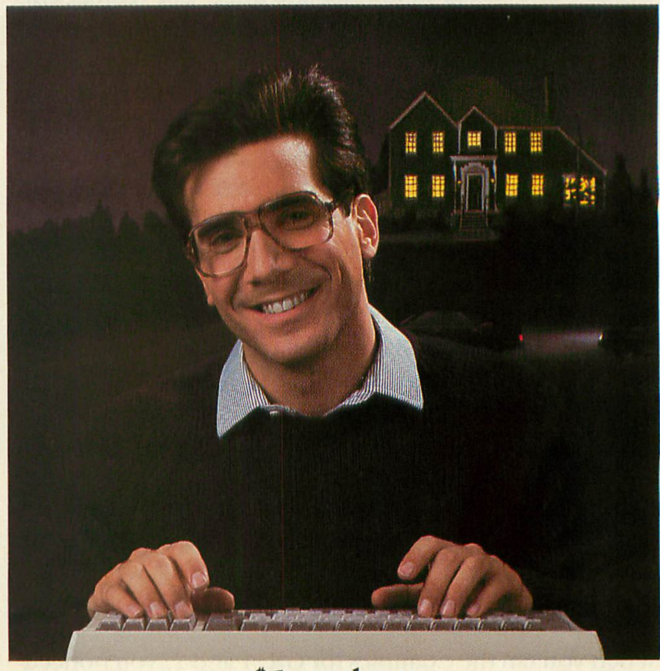
continued on page 48

"Frankly, online computing costs were real ugly..."

"With GEnie™ I found friends online, for less."



$10.00+ per hour



$5 per hour

Most online information networks can zap your computing budget faster than you can say "lightning." Not so with GEnie, the General Electric Network for Information Exchange. As part of the world's largest commercially available teleprocessing network of General Electric Information Services Company, GEnie lets you experiment with all of the fun and excitement that online computing has to offer.

Evenings, weekends, holidays. Just $5 per hour.

With GEnie, you can make friends, set up travel reservations, get the news, be entertained, even shop for a fraction of what other information services charge.

And you get a lot for your money.

With GEnie's Atari† ***RoundTable™ Special Interest Group*** you can discuss the latest in Atari products and accessories; download thousands of public domain software programs, and participate in exciting and informative online conferences. And, UPLOADS ARE FREE on GEnie!

There's more!

Meet friends old and new with GEnie's ***LiveWire™ CB Simulator*** or exchange messages with GEnie's ***electronic mail*** service. Schedule a trip with ***American Airlines travel service.*** Fun and learning for the whole family with ***Grolier's electronic encyclopedia.*** Play classic and ***multiplayer games.*** Track stock market quotes, check market indicators and maintain an automatically updated personal portfolio online with GEnie's ***Financial Services.*** All this and there's more to come. New services are being added each and every month!

Only $18 to register! Save up to 60%!

Check out the chart. Compare the savings for yourself. You'll find GEnie delivers all of your favorite services for an incomparable price, at incomparable savings.

Compare & Save*	Services						Pricing			
	Travel & Shopping	SIGs/User Groups	CB & Mail	Financial Services	News	Games	Registration Fee	Monthly Minimum	Non-prime time rates 300 baud	Non-prime time rates 1200 baud
The Source	X	X	X	X	X	X	$49.95	$10.00	$8.40	$10.80
CompuServe	X	X	X	X	X	X	$39.95	none	$6.00	$12.50
GEnie†	**X**	**X**	**X**	**X**	**X**	**X**	**$18.00**	**none**	**$5.00**	**$5.00**

**Basic rates and services shown in effect 11/86. †Non-prime time applies Mon.–Fri., 6pm–8am local time, all day Sat., Sun., and nat'l holidays. Subject to service availability. Additional charges apply for 2400 baud and financial services.*

With services and savings like these, now you can discover the friendliness of online computing without the high costs that can turn you into a downright monster. Get a happy ending going with GEnie. Sign up today!

Sign up from your keyboard today. 4 Easy Steps:

1. Have your Visa, MasterCard or checking account number ready.
2. Set your modem for local echo (half duplex)—300 or 1200 baud.
3. Dial **1-800-638-8369.** When connected, enter HHH
4. At the U#=prompt enter **XJM11899,GEnie** then RETURN.

Need help or more information? No modem yet? We can help. In U.S. or Canada call **1-800-638-9636.**

† Atari is a registered trademark of Atari Corporation.

GEnie™

Stay online longer, for less.



General Electric Information Services Company, USA

First fruits from the Practical Program Contest

BY HAL BOYER

Wage/Hour Paymaster

Here is our first published entry from the Antic 8-Bit Practical Program Contest—which is still open until June 15. Wage/Hour Paymaster is a short but useful program that keeps track of your hourly wage totals by week or by year. The BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

For the millions of wage-earners out there who are paid by the hour and put in overtime, Wage/Hour Paymaster calculates the weekly and yearly earnings from your total working hours. Short and simple as the program is, it has many convenient uses. For example, you could project how much cash that next overtime call will put into your pocket—and decide if the extra money is worth giving up your plans to attend the big ballgame.

To use Wage/Hour Paymaster, type in Listing 1, WAGES.BAS, check it with TYPO II and SAVE a copy before you RUN it.

When you RUN the program and see the first prompt, type in your hourly base pay. A pay rate of more than $20 or less than zero is not accepted. Type in your name at the next prompt and then choose whether to send the program's output to the screen or to a printer.

Wage/Hour Paymaster then creates a five-column table showing your base pay, overtime pay, weekly wages and yearly wages—in half-hour steps ranging from 40 to 65 hours per week.

PROGRAM TAKE-APART

Wage/Hour Paymaster is straightforward and well-remarked. The subroutines are near the beginning of the program to shorten access times. Each time a program tells your Atari to GOSUB a line, it searches for that line starting with the first line of your program. Placing often-used subroutines at the beginning of your program minimizes this search time.

The subroutine at lines 110-220 converts the program's output to dollars and cents format. Line 190 inserts the decimal point. If two trailing zeros are needed, the routine adds them at line 210. The resulting number is right-justified, so that the number column lines up on the decimal points.

Line 340 does a quick partial screen clear. The inverse up-arrow in the program is treated the same way as pressing [SHIFT] [DELETE]. This is one of the fastest and easiest ways to erase selected parts of your screen display. Wage/Hour Paymaster is set up for Epson or Star (Gemini) printers. The printing routines automatically insert top and bottom margins, so you don't need to worry about printing your report on top of a page perforation.

continued on page 48

BASE RATE= $10.43 — 52 WKS

HRS	BASE PAY	OVERTIME PAY	WEEKLY PAY	YEARLY PAY
40	$417.20	$ 0.00	$ 417.20	$21694.40
40.5	$417.20	$ 7.82	$ 425.02	$22101.04
41	$417.20	$ 15.65	$ 432.85	$22508.20

Now you can

RAMCHARGE Your Atari® 800

with the new

Magna 1MEG RAM-Board

- Enhanced memory capabilities
- Simple one-minute plug-in installation
- 100% Axlon® compatibility
- 288K available with Synfile+™/Syncalc™
- Up to 1 million bytes on a single board
- Up to 8000 sectors available as a Ramdisk
- MYDOS™ Ramdisk software included
- XL/XE/ST upgrades available also — call

RAMCHARGER 256K — $149.95
RAMCHARGER 512K — $199.95
RAMCHARGER 1MEG— $299.95

Ramchargers use custom printed circuit boards. We do not rewire your "old" Atari 16K boards as others do.

Magna Systems
"We build power"

Terms: Check, Money Order, COD
Add $4.50 shipping & handling.
New York State Residents add local sales tax

MAIL TO:
MAGNA SYSTEMS
147-05 Sandford Ave., Suite 4E
Flushing, N.Y. 11355
Phone: 718-939-0908
Bulletin Board 24 hrs. — 212-828-7658



SOFTWARE FAMILY ™

LETTERHEAD LABELS TITLES
MIX PIX-BORDERS-TEXT ANYWHERE! USE DESKTOP & MENUS!



FOR EPSON AND COMPAT. (STAR-GEMINI-PANASONIC-ETC.)

ONLY $29.95 EACH +$2.50 SHIPNG

SEND CHECK OR MONEY ORDER TO:

WHITE LION SOFTWARE
P.O. BOX 357 RIDGE, N.Y. 11961

CIRCLE 056 ON READER SERVICE CARD

CUSTOM 810 DISK DRIVE — $95.00

ASSEMBLED ON ACRYLIC BASE — NO CASE
FULLY FUNCTIONAL — XL COMPATIBLE — INCLUDES I O CABLE & POWER SUPPLY

800/400 MODULES

NEW PARTS COMPLETE WITH IC'S

$9.50 EA.

All Modules Complete with IC's

- 800 Main Board
- 800/400 CPU with GTIA
- 800 10K "B" O.S. Module
- 16K RAM CX853
- 400 Main Board
- 800 Power Supply Board
- 400 Power Supply Board
- 800 XL Modulator

INTEGRATED CIRCUITS

$4.50 EA.

•CPU	CO14806	•ROM	CO12399B
•CPU	CO14377 6502	•ROM	CO12499B
•CPU	CO10745	•ROM	CO14599B
•Pokey	CO12294	•Delay	CO60472
•PIA	CO14795	•	CO10444
•GTIA	CO14805		
•Antic	CO12296		
•PIA	CO10750		

DISK DRIVE

CUSTOM 810 DRIVE

Fully operational 810 mounted on acrylic base. No case. Includes I/O cable and power supply. **$95.00**

810 MODULES

810 Side Board $29.50
810 Side with Data Sep . . . 39.50
810 Power Board $15.00
810 Analog Board $10.00
Data Separator $12.50

MISC. HARDWARE

600XL 64K Upgrade $29.95
CO21697 . . . . $10.00
Fastchip for 800 400 . . . . $15.50
1050 FDC 2793 . . . . . . $19.50
850 Interface with Case . . $120.00
Numeric Keypad $15.00
850 or PR Printer Cable . . . $16.50

BOARD SETS

New Parts complete with IC's

800 4 PIECE BOARD SET
Includes 80 Main, CPU, 10K ROM, and Power Board $28.50

810 BOARD SET
Sideboard with Separator, Rear Power and Analog Boards $57.50

400 3 PIECE BOARD SET
Includes 400 Main, CPU and Power Supply Board $20.00
400 Keyboard $12.50

MANUALS

SAM'S Service Manuals for 800 or 400 or 800XL or 130XE . . . $19.50 ea.
520ST Service Manual . . . $39.50
Inside Atari Basic . . . . . . $ 5.00
Pilot Primer . . . . $ 5.00
ST-Machine Language . . . $17.50
ST-GEM Programming . . . $17.50
ST-Tricks & Tips $17.50
ST-Internal $17.50

850 BARE BOARD

Includes Parts List, Instructions $10.00
With all IC's $42.50

CONNECTORS

I/O 13PIN PC Mount $4.50
I/O Cable Plug Kit $4.50
30 Pin Cart. Socket $4.50

EDITOR/ASSEMBLER

Editor/Assembler Cartridge
Write your own High Speed 6502 Language Programs.
Written by Atari. Works with all Atari Computers except ST.
Manual not included $10.00
Cart. w/Atari Roots $22.95

BASIC CARTRIDGE

Basic Rev. "A" Cartridge works with all Atari Computers except ST. Includes manual.
800XL Owners Note! Use this Cartridge while programming to eliminate the severe errors in the Built-in "B" Basic $10.00

POWER PACKS

Replacement Transformer for: 800/400, 810, 1050, 1200XL, 1020 . . . . $14.50

ATARI ROOTS BOOK

A Guide to Assembly Language Programming $14.95

CARTRIDGE MAKING SUPPLIES

16K EPROM Board with case, uses two 2764's $5.95
10 or more . . . . . . $4.95 ea
Proburner Deluxe EPROM Burner in a cartridge, for 800/400 & XL/XE series. Programs EPROMS 2716, 2732, 2732A, 2764, 27128, 2532. + EEPROMS 2816A, 52B13, 52B33. Reads 2K to 8K Atari ROMS $145.00
2764 EPROM $3.95

SOFTWARE

Atari Joystick . . . . $ 7.00
Atari Paddles CX40 . . . . . $6.50
Donkey Kong Cart. $5.00
Pac-Man Cartridge $5.00
Eastern Front Cart. $5.00
Crossfire Cart. $5.00
Chicken Cartridge $5.00
Serpentine Disk $5.00
Steller Shuttle Disk $5.00
The Factory Disk $5.00
Spanish Lessons $7.50
Q*Bert Cartridge $10.00
Popeye Cartridge $10.00
Kindercomp Cart. $10.00

SERVICE RATES

Flat Service Rates below include Parts & Labor, 60-Day Warranty

800 . . . . $39.50
850 . . . . $39.50
600XL $49.50
1200XL $49.50
810 . . . . $69.50
800XL $49.50
1050 . . . . $85.00
800 Keyboard Repair $25.00

Above units repaired or exchanged with rebuildable exchange. Include $7.00 return shipping and insurance.

10K Rev. "B" Upgrade

for older 800/400's

End printer/disk drive timeouts and OTHER ERRORS. Many new programs require Rev. B. Type the following peek in Basic to see if you have Rev. B. **PRINT PEEK(58383).** If the result equals 56 you have the old O.S. **Three Chip ROM set with instructions $7.50**
Complete 10K Rev.B module $9.50

GTIA Upgrade For 800/400
Add additional graphics modes and make your older computer compatible with the latest software.
Instructions included . . . $4.50

810 Drive Upgrade
Greatly improve the performance of your older 810. Stabilize the speed with the addition of an analog and redesigned rear board.
Instructions included . . $27.50

AMERICAN TV

Mail Order and Repair . . . . . 15338 Inverness St., San Leandro, CA 94579
Business Address . . . . 1988 Washington Ave., San Leandro, CA 94577

NO MINIMUM ORDER! We accept money orders, personal checks or C.O.D.s. VISA, Master/Card okay. Credit cards restricted to purchases over $20.00. No personal checks on C.O.D. – **Shipping:** $4.00 shipping and handling on orders under $150.00. Add $2.00 for C.O.D. orders. California residents include 6½% sales tax. Prices subject to change without notice.
Much more! Send SASE for free price list.

*Atari is a registered trademark of Atari Corp.

CALL TOLL FREE 1-800-551-9995

IN CA CALL 415-352-3787

CIRCLE 005 ON READER SERVICE CARD

Multi-AUTORUN

27 files at your fingertips

BY BILL BODENSTEIN

With Multi-AUTORUN you can automatically load as many as 27 binary AUTORUN files under DOS 2 or DOS 2.5. This BASIC program works on all 8-bit Atari computers of any memory size, with disk drive.

I love writing utility programs, especially those requiring little time and effort to construct. Such was the case with this short BASIC program. But after I write a program, I tend to have a hard time explaining what it is good for.

It seems as if most machine language programs you find in the pages of **Antic** work only as AUTORUN.SYS files. But unfortunately, the commonly used Atari DOS 2.0 and 2.5 can only binary-load one AUTORUN file at start-up. Wouldn't it be nifty if you could make DOS load a *chain* of binary files when booting? If your answer is "yes," type in Listing 1, MULTIAUT.BAS, check it with TYPO II and SAVE a copy before you RUN it.

When you RUN the program, Multi-AUTORUN will ask you if you are sure you wish to modify your DOS. Type Y to continue, or N to abort. Next, insert your disk into drive 1 and press [RETURN]. This program writes information to your disk, so you should remove any write-protect tabs from your disk.

IMPORTANT NOTES

Don't use Multi-AUTORUN directly on the Antic Monthly Disk. Instead, copy the DOS.SYS file (version 2.0 or 2.5) from any source to a new work disk.

Be Careful: Multi-AUTORUN will not work for *all* batches of AUTORUN files. For example, if one AUTORUN file is written to work with BASIC installed and a second file isn't, you will obviously run into trouble. Also make sure that you are not loading several AUTORUNs that want to occupy the same part of memory at the same time.

HOW IT WORKS

Multi-AUTORUN inserts a machine language patch into the DOS routine that loads AUTORUN.SYS. Once modified, your new Atari DOS will binary-load AUTORUN.SYS, AUTORUN1.SYS, AUTORUN2.SYS, etc., *in succession*, up to AUTORUN9.SYS or until it receives a "file not found" error. That is, if no file named AUTORUN.SYS is found, DOS won't even check for AUTORUN1.SYS. Therefore, always name your start-up files in correct sequence to ensure proper loading.

The patch is only about 50 bytes long, so you won't lose much memory or much compatibility with machine language programs stored in low memory. In fact, you'll lose perhaps one sector on your disk with this modification.

By the way, once you've modified DOS, you can use the WRITE DOS FILES option from the DOS menu to modify other disks—you only need to run the BASIC program once.

GET 27 AUTORUNS

You could also use the letters of the alphabet instead of numbers to get even more AUTORUN files.

Just start with an A in place of the 1 in AUTORUN1.SYS and you could have as many as 27 AUTORUN files on one disk. The program will load AUTORUN.SYS, AUTORUNA.SYS, AUTORUNB.SYS, and so on.

To try this version of the program, simply replace the 48 in lines 520 and 530 with a 64. Make sure to RUN this version of the program with an *unmodified* Atari DOS in memory.

I hope I've clearly explained what Multi-AUTORUN is good for, because I've just now thought of an idea for another short utility program . . .

Bill Bodenstein, a computer science major at the University of Cincinnati, is a prolific machine language programmer, churning out utilities left and right.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **265** ON THE READER SERVICE CARD.

Listing on page 86 

NEW OWNERS COLUMN
continued from page 43

characters, they will appear in one color. Lower-case letters will appear in upper case, but in a *different* color. Two more colors can be obtained by using inverse-capital letters and inverse lower case letters:

```
10 GRAPHICS 1
20 PRINT "THE FIRST COLOR";
30 PRINT "the second color"
40 PRINT "THE THIRD COLOR":REM in inverse
50 PRINT "the fourth color":REM in inverse
```

You can get lower-case letters and certain symbols in GR. 1 and 2 by POKEing 756,226, which gives you four colors of the lower-case letters, but you can't have both capital letter and lower-case letters on the screen at the same time.

What about numbers and other characters? You can print an inverse number, but there's no such thing as a lower-case number. To get the other two colors for numbers, you need to print out different characters altogether. Like lower-case letters, certain characters don't appear on the GR. 1 and 2 screens the way you'd expect them to appear.

A full reference table showing these character substitutions would be too large to print here. In many cases, however, you can determine the proper ASCII value to use by taking the ASCII value of your original character and subtracting 32 (for color register 1), adding 96 (for color register 3) or adding 128 (for color register 2). Next month's New Owners Column will explain the Atari color commands in detail.

THE LISTING

This month's listing, by **Antic** Technical Editor Charles Jackson, is a flashy visual demonstration showing what all the different Atari graphics modes look like. Type in Listing 1, NEWOWN12.BAS, check it with TYPO II and SAVE a copy to disk before you RUN it.

When RUN, the program begins its tour through the graphics modes with a simple Graphics 1 text screen. Press any key when you want to move along to a Graphics 2 text screen. Notice the flashing text window at the bottom of the screen.

Now you can press any key to switch over to the "dot" or "bit-mapped" graphics modes. Here, the program plots the course of a bouncing, rotating line. After each bouncing line is drawn, you may press the [START] key to draw another bouncing line, or press the [SELECT] key to move to the next graphics mode.

While the line is being plotted, the text window displays the number of the graphics mode you're seeing, the number of available columns and rows, the number of available colors and the number of the color currently being used. Since most of these demo screens include a text window, the number of available rows is decreased.

Graphics 9, 10 and 11 do not allow text windows, so you'll need to remember to press the [START] or [SELECT] keys after each "bounce." I've included a short beeping sound to let you know when a drawing is complete.

PROGRAM TAKE-APART

Line 35: Defines four color values for graphics mode 10. Graphics 10 allows nine different colors, but only five of them may be defined with the SETCOLOR statement (which you'll learn about in the next lesson). The four remaining color values must be POKEd into memory.

Lines 70-90: These lines alternate the colors on our Graphics 1 screen, giving the effect of motion. This technique is often called "color rotation." Since we don't want to rotate our colors *too* fast, we slow down the process with a statement such as X=SIN(4). This statement uses your Atari's trigonometric functions, which take a (relatively) long time to compute.

Lines 120-140: This routine displays and removes the flashing text window in the Graphics 2 demo.

Lines 150-230: These lines tell the computer which graphics mode you want to use, along with the screen width, screen height and the number of available colors.

Lines 800-920: This is the subroutine which draws the bouncing line. Actually, the routine randomly creates two sine waves, one point at a time. Each time a pair of points is plotted, the program draws a line between them. The effect is a bouncing, rotating line capable of creating colorful patterns.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **269** ON THE READER SERVICE CARD.

Listing on page 96 

WAGE/HOUR PAYMASTER
continued from page 45

Line 350 sends the printer a control code to print one line of expanded text. Line 370 calls for condensed print and line 650 lets you adjust the linefeed. If you own a printer that is not compatible with Epson or Star, check your printer manual for the substitute control codes, and insert them into these lines.

All calculation is performed in lines 760 to 830. If you wish to change your overtime pay rate from the straight time-and-a-half specified by the program, replace the 1.5 at line 800 with any other pay rate.

This short program can easily be modified to your own needs, if you know the essentials of BASIC programming. For example, a plumber—or other wage-earner who makes more than $20 an hour—can increase the program's maximum base pay rate. (Hint: Don't forget to change the 20 in line 490.)

If you are a part-time worker who normally puts in less than 40 hours weekly, or a workaholic who toils more than 65 hours a week, you might want to change the program's minimum and maximum hours (Hint: One modification is the HRS=39.5 in line 1110.)

Hal Boyer lives in Indianola, Mississippi. This is his first publication in **Antic**.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **268** ON THE READER SERVICE CARD.

Listing on page 90

SEIKOSHA SP-1000A

Hattori Seiko
1111 MacArthur Blvd.
Mahwah, NJ 07430
(800) 422-7768—National
(201) 529-4655—New Jersey
$299
CIRCLE 255 ON READER SERVICE CARD

Reviewed by Gregg Pearlman

Antic has not been overly impressed with the Seikosha printers we reviewed in the past. But then the new U.S. management team from Hattori Seiko Computer Peripherals showed up at our offices as part of their nationwide tour spreading the message that the Seikosha product line had been thoroughly revamped.

We're glad we tried out the **Seikosha SP-1000A**. This is a full-featured, affordable, well-documented, Epson-compatible printer that delivers near letter quality and is probably the quietest dot-matrix we use around here.

It's still pretty slow—44 characters per second, as opposed to 51 for the Atari XMM801. (Reviewed in **Antic**, December 1986.) Near letter quality speed was only 13 characters per second. A 20,000-character text file printed with a simple 8-bit BASIC program was used for the speed tests.

On the up side, the trim and compact SP-1000A is easy to load, offering adjustable-width tractor feed as well as single-sheet paper feed. It can produce condensed and double-wide print.

The SP-1000A's Epson FX-80 emulation handles graphics with no problem. On the Atari 8-bits, the Seikosha did a fine job with Picture Plus and Broderbund's Print Shop. On the ST, there were no problems printing out DEGAS Elite pictures, although one of the printer's DIP switches had to be changed.

The SP-1000A's near letter quality printing can be accessed either from one of the panel buttons on the front of the printer or via your software. (We tended to get better results using the panel button.) Other than that, the Seikosha's NLQ printing is comparable to what we got from the more expensive Star NL-10. (Reviewed in **Antic**, January 1987.) The SP-1000A will even give you near letter quality with elite type, which the NL-10 can't.

Graphics printouts on the SP-1000A are sharp and well-detailed—but not as dark as pictures we have obtained from other printers. Text printing was also on the light side. And it didn't help much to use brand-new ribbons or to move the print head closer to the paper (per instructions in the manual). Incidentally, our favorite replacement ribbon cartridge for the SP-1000A is presently the Radio Shack DMP-130 ($10.95).

The printer's manual runs 103 pages and provides several illustrations and examples. The DIP switches on the back of the SP1000A are easily accessed and their functions are described thoroughly. Eleven international character sets can be called up via the DIP switches.

The Seikosha SP-1000A is a good all-around printer. For a low list price of $299 (which will probably be widely discounted), you can sacrifice a little speed for good NLQ text and graphics printouts that are nice and sharp (although a bit light). If you're seeking a versatile, affordable dot-matrix printer, you can't go wrong with the SP-1000A.

(See the ST Resource cover on page 59 for an example of SP-1000A graphics printing.)

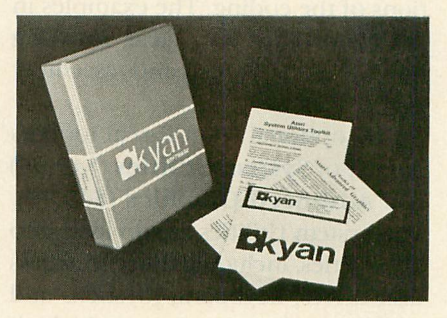
KYAN PASCAL

Kyan Software
1850 Union Street
San Francisco, CA 94123
(415) 626-2080
$69.95, 48K disk
CIRCLE 253 ON READER SERVICE CARD

Reviewed by Sol Guber

The new **Kyan Pascal** upgrade is up there with such top-notch programming environments as BASIC XL, ACTION!, Forth and MAC/65. This strong software development tool conforms to the ISO Pascal standard (level 0), so it's portable to mainframe computers. An enclosed series of toolkits makes it even more powerful.

The non-protected Pascal disk comes with both a compiler and an assembler. Assembly language code is produced in the final pass, allowing forward references to be resolved and



code to be generated very quickly. The assembler also lets the programmer insert assembly code into the source code.

Kyan Pascal uses 13-digit precision for numbers and is not slowed down by doing so. It also allows for the linking of source code modules at compile time for separate writing and debugging of programs.

This package comes with KIX, a new command-line file-management system. To write a program, you must enter the editor—which is good and fast. Once the program is written, it must be compiled.

Compiler options include debugging, generating source code, even watching the compilation progress. The compiler examines the whole program. Errors, while normally shown on the screen, can be sent either to disk or the printer.

The documentation is very good and has an excellent 150-page tutorial on Pascal. The disk contains sample reference programs. The tutorial begins by showing how a program is written, including the syntax and

continued on next page

structure of the commands needed to write a program. It then progresses to decision-making, looping, variables and procedures, and it includes information on records, sets, files and pointers.

Instead of P-code, Kyan Pascal produces native 6502 code. It changes the Pascal to assembly source code and then runs it through an assembler, which is available to the programmer as well as the compiler. The assembler has macros and allows for included files, and it's useful in time-critical applications to speed up portions of the coding. The examples in the manual are very clear, showing how to mix Pascal and assembly procedures.

The optional Kyan Pascal toolkits consist of **System Utilities** ($49.95) and **Advanced Graphics** ($49.95). The System Utilities are divided into I/O utilities, including those to access disk drives, keyboard, joysticks and paddles; system functions, which allow for changes in character sets, key clicks, [BREAK] keys and rebooting; screen management, which lets you place information anywhere on the screen and access all editor commands. Other routines include a random number generator, string-to-number conversion, and sort and merge routines.

The Advanced Graphics package provides routines for Player/Missile graphics, displaying high-resolution 3-D objects and using the Atari 1020 plotter. The 18 P/M procedures include setting up, generating shapes, movement and collision information. The seven plotter routines allow for the output of the 3-D graphics in color.

One limitation of the program is that Kyan has placed a licensing fee on use of the runtime library—which must be present on disk if you want someone to be able to run your Pascal application without having the Kyan package.

Kyan Pascal is a good, solid implementation that will help anyone learn to program in this useful language. It will suit anyone needing the structure of a sophisticated, multi-featured Pascal.

LEADER BOARD (8-BIT)

Access Software Inc.
2561 South 1560 West, Suite A
Woods Cross, UT 84087
(801) 298-9077
$39.95
CIRCLE **251** ON READER SERVICE CARD

Reviewed by Gregg Pearlman

Our 8-bit **Leader Board** golf game arrived a bit later than the fascinating ST version. But when **Antic** checked out the 8-bit package we discovered that it was good enough to almost make you forget about the ST game.

The main difference from the ST version is that the joystick-controlled 8-bit Leader Board doesn't present roughs, sand traps or trees. But its hazards are dangerous enough—everywhere you look, there's water.



In real golf, you'd be penalized one stroke and a replayed shot for each ball you put into the water, not to mention the added expense of more golf balls. And you must drop a ball on dry land no nearer the hole than the point at which the ball went into the water. Leader Board only adds a stroke to your score and lets you replay the shot. But because of all the water, those replays can add up fast.

A 15-page manual tells you all you need to know, and you'll get along fine, even if you don't golf. The manual explains which club to use when. You'll need this information whether or not you actually play golf, because while your heart might tell you, for instance, to use your pitching wedge 100 yards from the hole, the manual says not to use it beyond 83 yards.

Leader Board's three ability levels, Novice, Amateur and Professional, are progressively tougher *and* more realistic. Novice players will hit the ball in the direction they aim—they don't have to worry about hooking or slicing. But Amateur players must rely on their reflexes in order not to hook or slice. So do Professionals, but they have the added concern of wind factors affecting their play.

It only took a short while to get the hang of Leader Board. I prudently played my first few rounds at the Novice level, topping out at an 18-hole score of 64 (on a par 72 course). I thought that was a fairly awesome round of golf, so I tried the Professional level. I shot an 80 (including five tee shots into the water—on one hole), which still isn't bad, but 80 won't win the big tournaments.

Your golf bag contains three woods, nine irons, a pitching wedge and a putter. Each club is given a minimum and maximum strike distance as a guide. The game doesn't acknowledge the possibility of hitting a ball farther with some irons than with some woods. Nor does it take into account the fact that *in theory* you're far more likely to hit the ball straight with an iron than with a wood.

Leader Board's ST graphics feature outstanding detail and quick updating. But the graphics are top-class on the 8-bit also. The detail isn't as sharp, of course, but the screen quickly updates its first-person picture of the course. In this game, however (and indeed in most 3-D games, it seems), the player's perspective is a bit odd. You can't really tell how far away the hole is. Luckily Access has provided diagrams of the four built-in courses, so at least you'll know where to hit the ball in order to avoid the water.

Like real golf, success with Leader Board is a matter of timing. You must know exactly when to press the joy-

stick button for maximum distance and straight shooting. It takes practice. That's why Leader Board provides a driving range, which lets you see on-screen how far each club can hit the ball.

One nice thing about Leader Board is that you can copy a backup disk without any trouble. However, you'll need the supplied hardware key in joystick port 2 for the game to work.

Leader Board is a fun game whether or not you actually play golf. Its graphics are a wonder to see, and play is, for the most part, realistic. The only thing wrong with Leader Board is that it might keep you indoors, playing golf from your armchair, instead of outside in the fresh air.

VESTOR

Investment Technnologies
Metropark
510 Thornhall Street
Edison, NJ 08837
(800) 524-0831—National
(201) 494-1200—New Jersey
$295, requires modem
CIRCLE 258 ON READER SERVICE CARD

Reviewed by Edward Beddow

Vestor is a 24-hour online investment database offering over 30 "technical trading" programs for buy/sell signals, screens, fundamental and technical rankings, etc. According to Investment Technologies, a model portfolio using the buy/sell signals generated from this system from 1964 to 1984 beat the market averages by over 20 percent per year. Of course, as with any investment service, future results cannot be guaranteed.

Your Vestor package comes with only a manual and a password. To access this mainframe-based service, your computer needs a modem and communications software. The one-time fee of $295 and a minimum $24 monthly fee are automatically billed to your credit card. Monthly charges are based on actual usage and also depend on the types of reports requested. In addition, local access via Telenet carries charges for connect time. However, brokerage clients of Charles Schwab & Co. can get a $100 rebate on the up-front fee.

The Vestor main menu choices are stocks, options, futures, averages and information/retrieval. Each of these gives you several reporting or screening selections accessed by a two-character code, with output format either in standard tabular report or bar-chart. The stocks section has technical statistics on about 4,500 securities as well as a graphic presentation of share price and the ability to screen the database for numerous technical factors.

The options section is much like the stocks area. The program does not access or chart option prices, but instead gives the share prices of optionable stocks and a "what if?" analysis for various price movements. The futures and averages modules provide similar data on selected commodities and the major market indexes.

The heart of the Vestor system is its buy/sell signals generated by proprietary equations. The stock evaluation section is the most commonly used module, providing technical indicators that show the comparative attractiveness of a security. The relative strength of a buy or sell signal is indicated. And at the bottom of the chart, the estimated profit is calculated as a self-test of the buy/sell algorithm.

The handy information/retrieval module provides not only historical price information but also lets you track securities, holdings and profit/loss in several individual portfolios. You can request ticker symbols for unfamiliar securities. Online help is available and you can send messages directly to the sysop.

The manual is easy to understand and has sound information on developing an investment strategy based on personal goals. Risk, leverage, diversification and discipline in making decisions is stressed in several parts of the manual. Vestor is easy to use because all selections are made from menus. I liked being able to save several lists of common stocks for evaluation and charting, eliminating the tedium of typing in ticker symbols each time the program is used. The portfolio management system, though really just a simple spreadsheet, is a nice, useful extra.

Reports and charts both take too long to receive; they don't scroll across the screen like the text sent from the originating system. Also, the charts are not high-resolution graphics, but rather are made up of = and x symbols to create a sort of bar chart which can be difficult to read.

This is definitely a technical trading program. In other words, it will appeal to investors who make decisions based on arcane statistical trends. Vestor's buy/sell advice is generated by proprietary formulas, the makeup of which are not disclosed to users. While the publisher often mentions Vestor's inclusion of fundamental analysis, I found very little fundamental research information on which investment decisions could be based.

I question the program's statistical information. For example, some earnings-per-share numbers were out of date. Users may be making decisions based on non-current data. I also found that Vestor's industry codes for many companies didn't accurately describe the business of the company being evaluated.

What this package provides is access to a proprietary trend line and buy/sell signals which seem to change with great frequency. Adhering to all the buy/sell signals would require a great deal of trading and the payment of associated brokerage commissions. In any case, you must establish personal trading rules by which to employ the signals provided by the program.

The publisher does not provide a reference booklet listing the securities included in the database, but almost all common stocks on the New York and American exchanges and 1,500 of the more active OTC issues are included.

New Products

*New Products notices are compiled by the **Antic** staff from information provided by the products' manufacturers. Antic welcomes such submissions, but assumes no responsibility for the accuracy of these notices or the performance of the products listed.*

EASYFIND SYSTEM

(magazine index)
Sierra Services
P.O. Box 40454
Bellevue, WA 98004
(206) 881-2868
$9.95, 48K disk

This specialized information retrieval software works with indexes compiled from articles in **Antic** and other computer magazines. Each one-year index contains a summary of every program, article, review, correction and tip—all cross-referenced. The **EasyFind System** uses multiple search phrases or keywords to quickly retrieve these references, outputting them to screen, disk or printer. Each full year of information costs $4.95 per magazine.

CIRCLE **256** ON READER SERVICE CARD

VIDEO VEGAS

(entertainment software)
Baudville
1001 Medical Park Drive S.E.
Grand Rapids, MI 49506
(616) 957-3036
$29.95, 48K disk



Turn your Atari into a casino with **Video Vegas**. Play the slots, blackjack, draw poker and keno. The Lucky 7 slot machine is a classic three-reel slot which pays back about $98 for each $100 you put in. Blackjack features a sort of card-counting tutorial to sharpen your skill. Draw Poker mimics video poker machines, paying off on a pair of jacks or better. Keno is just like real Keno—except there's no real money to lose.

CIRCLE **257** ON READER SERVICE CARD

MATH BLASTER!, WORD ATTACK!, SPELL IT!

(education software)
Davidson & Associates Inc.
3135 Kashiwa Street
Torrance, CA 90505
(800) 556-6141—National
(213) 534-4070—California
$49.95 each, 48K disk

These three programs help students master math, vocabulary and spelling in a new, exciting way. **Math Blaster!**, for grades 1 through 6, contains more than 600 problems grouped into 25 "families of facts" in ascending difficulty levels covering addition, subtraction, multiplication, division, fractions, decimals and percents. **Word Attack!** gives 4th-graders through 12th-graders 675 new words in 27 lists and various tests. Additional data disks are available for $19.95. **Spell It!** has 50 word lists covering 1,000 commonly misspelled words in five difficulty levels featuring games and an editor.

CIRCLE **258** ON READER SERVICE CARD

GUDERIAN, STOCKS AND BONDS

(entertainment software)
Avalon Hill
4517 Harford Road
Baltimore, MD 21214
(301) 254-9200
48K disk

Guderian ($30) uses the popular joystick-driven system from the Gulf Strike game to simulate this World War II campaign. The player must master Blitzkrieg tactics to encircle and overrun Soviet divisions and drive deep enough into Russia to capture Moscow. **Stocks and Bonds** ($25) puts you into a different kind of battle. In a fast-paced format, you invest in securities and get a graphic understanding of the Bull and Bear markets along with the importance of performance histories in planning an investment strategy.

CIRCLE **260** ON READER SERVICE CARD

KEYPUNCH SOFTWARE

(various programs)
Keypunch Software
1221 Pioneer Building
St. Paul, MN 55101
(612) 292-1490
$6.99 to $9.99, 48K disk

The extremely low prices are the kicker in this new family of 8-bit software. Entertainment software includes Gambler, Space Games, Arcade Games, Strategy Simulations and Mind Mazes. Others include Money Tools, Fun in Learning and Fun in Numbers.

CIRCLE **264** ON READER SERVICE CARD

WARSHIP

(entertainment software)
Strategic Simulations Inc.
1046 N. Rengstorff Avenue
Mountain View, CA 94043
(415) 964-1353
$59.95, 48K disk

Almost every warship that fought in the Pacific from 1941-45 is included in **Warship**. Choose from 79 classes of ships from the Allied or Japanese fleets, or modify ship data to create new warships. The game has four scenarios—including one non-historical situation. Players can also devise original maps to create any possible ship-to-ship tactical surface engagement.

CIRCLE **261** ON READER SERVICE CARD

Return the favor. When you call a manufacturer or supplier about a product you've seen advertised or otherwise mentioned in ANTIC, please tell them so. This will help us to continue to bring you the latest information about products that will make your Atari computer an even more valuable investment in the future.
—ANTIC ED

Software Discounters of America

S.D. of A.

For Orders Only—1-800-225-7638
PA Orders—1-800-223-7784
Customer Service 412-361-5291

- Free shipping on orders over $100 in continental USA
- No surcharge for VISA/MasterCard
- Your card is not charged until we ship

ABACUS BOOKS

- ST Gem Prog. Ref.
- ST Graphics & Sound CALL
- ST Internals FOR
- ST Machine LOW
- Language PRICES
- ST Midi Programming
- ST Peeks & Pokes
- ST 3-D Graphics
- ST Tricks & Tips

ABACUS SOFTWARE

- Assem/Pro ST $39
- Data Trieve ST $33
- Forth/MT ST $33
- Paint Pro ST $33
- Text Pro ST $33

ACADEMY

- Typing Tutor ST $23

ACCESS

- Leader Board (D) $25
- Leader Board Golf ST $25
- L.B. Tourn. Disk #1 ST $14
- L.B. Tourn. Disk #1 (D) $14
- Tenth Frame ST $25
- Triple Pack: BH1, BH2, Raid Over Moscow (D) $14

ACCOLADE

- Fight Night (D) $19
- Hardball (D) $19
- Mean 18 Golf ST $25
- Mean 18 Famous Course Disk #1 ST $14

ACTIVISION

- Great American Cross Country Road Race (D) $16
- Hacker (D) $16
- Hacker 2 ST $33
- Music Studio ST $39
- Music Studio (D) $23
- Portal ST $33
- Shanghai ST $29
- Tass Times in Tonetown ST $33

AMERICAN EDUCATIONAL COMPUTER

- Biology (D) $14
- French (D) $14
- Grammar (D) $14
- Science: Grades 3/4 (D) $14
- Science: Grades 5/6 (D) $14
- Science: Grades 7/8 (D) $14
- Spanish (D) $14

ARTWORX

- Bridge 4.0 (D) $16
- Bridge ST $19
- Hole in One Golf ST $14
- Mail List ST $14
- Strip Poker (D) $21
- Strip Poker ST $25
- Thai Boxing ST $14
- Female Data Disk 1 $14
- Male Data Disk 2 $14
- Female Data Disk 3 $14

AVANTAGE

- Spy vs. Spy 1 & 2 (D) $9.88

BATTERIES INCLUDED

- B-Graph (D) $25
- Degas ST $23
- Degas Elite ST $49
- I*S Talk ST $33
- Isgur Portfolio System ST $129
- Paperclip (D) $36
- Paperclip w/Spell 130XE $36
- Thunder ST $25
- Time Link ST $33

BAUDVILLE

- Video Vegas ST $23

BRODERBUND

- Karateka (D) $19
- Print Shop (D) $26
- Print Shop Graphics Library #1, #2, #3 (D) $16 Ea.
- P.S. Companion 64K (D) $23

CENTRAL POINT

- Copy 2 ST $25

CBS

Success w/Math Series:

- Addition/Subtraction (D) $16
- Decimals: Add/Subt (D) $16
- Decimals: Mult/Div (D) $16
- Fractions: Add/Subt (D) $16
- Fractions: Mult/Div (D) $16
- Multiplication/Division (D) $16

CDA

America Cooks Series:

- American ST $9.88
- Chinese ST $9.88
- French ST $9.88
- Italian ST $9.88
- Mexican ST $9.88

DATASOFT

- Alt. Reality: City (D) $25
- Alt. Reality: City ST $25
- Alt. Reality: Dungeon (D) $25
- Mercenary (D) $19
- Mercenary ST $25
- Never Ending Story (D) $19
- Theatre Europe (D) $23
- Video Title Shop (D) $19

DAVIDSON

- Math Blaster (D) $33
- Spell It (D) $33
- Word Attack (D) $33

ELECTRONIC ARTS

Software Classic Series:

- Age of Adventure (D) $9.88
- Archon (D) $9.88
- Mail Order Monsters (D) $9.88
- M.U.L.E. (D) $9.88
- Music Const. Set (D) $9.88
- One-on-One (D) $9.88
- Pinball Const. Set (D) $9.88
- Racing Dest. Set (D) $9.88
- Seven Cities of Gold (D) $9.88

- Super Boulder Dash (D) $9.88
- Touchdown Football (D) $9.88

ELECTRONIC ARTS

- Archon 2: Adept (D) $23
- Battle of Chickamauga (D) $23
- Chessmaster 2000 (D) $26
- Chessmaster 2000 ST $29
- Lords of Conquest (D) $23
- Movie Maker (D) $23
- New Tech Coloring Book ST $14
- Rommel Battles for Tobruk (D) $26
- Skyfox ST $29
- Star Fleet I (D) $33
- Star Fleet 1 ST $33

EPYX

- Champ. Wrestling ST $23
- Rogue ST $23
- Super Cycle ST $23
- Temple Apshai Trilogy (D) $23
- Temple Apshai Trilogy ST $23
- Winter Games ST $23
- World Champ. Karate (D) $19
- World Games ST $23

FIREBIRD

- Golden Path ST $29
- The Pawn ST $29
- Star Glider ST $29

FIRST BYTE

- First Shapes ST $33
- Kid Talk ST $33
- Math Talk ST $33
- Speller Bee ST $33

FTL

- Dungeonmaster ST $25
- R.P.V. ST $25
- Sundog ST $25

GAMESTAR

- Champ. Baseball '86 ST $29
- Champ. Basketball ST $29

HAYDEN

- Sargon 3 (D) $25

HBJ

- Computer SAT (D) $49

HI-TECH EXPRESSIONS

- Card Ware (D) $6.88
- Heart Ware (D) $6.88

- Party Ware (D) $9.88

INFOCOM

- Ballyhoo (D) $23
- Enchanter (D) $23
- Hitchhiker's Guide to the Galaxy (D) $23
- Leather Goddesses (D) $23
- Moonmist (D) $23
- Planetfall (D) $23
- Sorcerer (D) $25
- Spellbreaker (D) $29
- Trinity ST $25
- Wishbringer (D) $23
- Zork 1 (D) $19
- Zork 2 or 3 (D) $25

* All titles in stock for 520 ST—*Call for prices*

MASTERTRONIC

- Action Biker (D) $6.88
- Elektraglide (D $6.88
- Magnum Joystick $12
- Ninja (D) $6.88
- Speed King (D) $6.88
- The Last V8 (D) $6.88
- Vegas Poker & Jackpot (D) $6.88

MICHTRON

- BBS 2.0 ST $49
- Calendar ST $19
- Corner Man ST $33
- Karate Kid II ST $25
- Major Motion 520 ST $25
- M-Disk Plus ST $25
- Mighty Mail ST $33
- Personal Money Mgr. ST $33
- Pinball Factory ST $25
- Pro Football Wizard ST $25
- The Animator ST $25
- Time Bandit ST $25

MICROLEAGUE

- Baseball (D) $25
- Box Score Stats (D) $16
- General Manager (D) $25
- 1985 Team Data Disk $14
- 1986 Team Data Disk $14
- WWF Wrestling ST Call

MICROPROSE

- Conflict in Viet Nam (D) $25
- Crusade in Europe (D) $25
- Decision in Desert (D) $25
- F15 Strike Eagle (D) $23
- Kennedy Approach (D) $16
- Silent Service (D) $23
- Silent Service ST $25
- Top Gunner (D) $16

MILES COMPUTING

- Harrier Strike Mission ST $33

MINDSCAPE

- Balance of Power ST $33
- Bank St. Music Writer (D) $9.88
- Brattacus ST $33
- Crossword Magic (D) $33

MINDSCAPE CINEMAWARE

- Defender of the Crown ST Call
- S.D.I. ST Call
- Sinbad: Throne of the Falcon ST Call
- The King of Chicago ST Call

MONOGRAM

- Dollars & Sense ST $65

ORIGIN

- Autoduel ST $33
- Ogre (D) $26
- Ogre ST $26
- Ultima 3 ST $39
- Ultima 3 (D) $32
- Ultima 4 (D) $39

OSS

- Action (R) $47
- Action Tool Kit (D) $19
- Basic XE (R) $47
- Basic XL (R) $37
- Basic XL Tool Kit (D) $19
- MAC 65 (R) $47
- MAC 65 Tool Kit (D) $19
- Personal Pascal ST $49

PCA

- The Graphic Artist ST $129

REGENT

- Regent Base ST $49
- Regent Word 2 ST $49

SIERRA

- Black Cauldron ST $25
- Donald Duck's Playground ST $16
- Kings Quest 2 ST $33
- Space Quest ST $33
- Winnie the Pooh ST $16

SPINNAKER

- Adventure Creator (R) $6.88
- Alphabet Zoo (R) $6.88
- Delta Drawing (R) $6.88
- Facemaker (R) $6.88
- Fraction Fever (R) $6.88
- Kids on Keys (R) $6.88
- Story Machine (R) $6.88

SSI

- Battalion Commander (D) $25
- Battle of Antietam (D) $33
- Colonial Conquest (D) $25
- Gettysburg (D) $37
- Mech Brigade (D) $37
- NAM (D) $25
- Phantasie (D) $25
- Phantasie ST $25
- War Game Const. Set (D) $19
- Wizard's Crown (D) $25

SUBLOGIC

- Flight Simulator 2 (D) $32
- Flight Simulator ST $33
- F.S. Scenery Disks Call
- Jet ST Call

SYNAPSE

- Syn-Calc (D) $33
- Syn-File (D) $33

TDI

- Modula 2 ST $49
- Modula 2 (Dev.) ST $95

TIMEWORKS

- Data Manager ST $49
- Sylvia Porter's Swiftax ST $49
- Swiftcalc ST $49
- Word Writer ST $49

TRONIX

- S.A.M. $19

UNICORN

- Decimal Dungeon ST $25
- Fraction Action ST $25
- Kinderama ST $25
- Math Wizard ST $25
- Read & Rhyme ST $25

UNISON WORLD

- Art Gallery 1 ST $19
- Art Gallery 2 ST $19
- Print Master ST $25

VALUE TIME

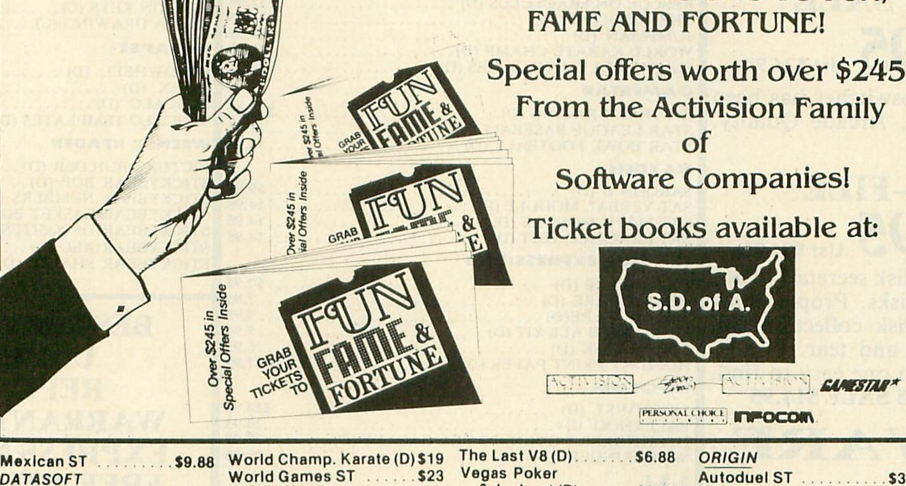
- Calendars & Stationary ST $9.88
- Greeting Cards ST $9.88
- Signs & Banners ST $9.88
- Art Library 1 or 2 ST $9.88 Ea.

XLENT

- First Xlent W.P. (D) $19
- Page Designer (D) $19
- P.S. Interface (D) $19
- Rubber Stamp (D) $19
- Rubber Stamp ST $25
- Typesetter (D) $23
- Typesetter Elite ST $33
- Write 90° ST $19

ACCESSORIES

- Anchor VM 520 300/1200 Baud Modem ST $139
- Bonus 5¼ SS, DD $5.99Bx
- Bonus 5¼ DS, DD $6.99Bx
- Bulk Disks 3½ Call
- Compuserve Starter Kit $19
- Epyx 500XJ Joystick $14
- MPP300AT/1000E $34
- Supra 20 meg ST Drive Call
- Wico Boss $12
- Wico Bat Handle $17



P.O. BOX 111327—DEPT. AT—BLAWNOX, PA 15238

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately. Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! *Shipping: Continental U.S.A.*—Orders under $100 add $3; *free shipping on orders over $100. AK, HI, FPO, APO—add $5 on all orders. Canada & Puerto Rico—add $10 on all orders.* Sorry, no other International orders accepted! *PA residents add 6% sales tax on the total amount of order including shipping charges!* Prices subject to change without notice. *REASONS FOR CALLING CUSTOMER SERVICE—412-361-5291 (1)* Status of order or back order *(2)* If any merchandise purchased within 60 days from S.D. of A. is defective, please call for a return authorization number. Defective merchandise will be replaced with the same merchandise only. NO CREDITS! After 60 days please refer to the manufacturers warranty included with the merchandise & return directly to the manufacturer. *Customer service will not accept collect calls or calls on S.D. OF A.'s 800# order lines! REGULAR HOURS: Mon.-Fri. 9AM-5:30 PM, Sat. 10AM-4PM Eastern Time.* Have you seen our on line catalog of 1000 software titles for Commodore, Atari, Apple, IBM and Amiga? It's on Compuserve's Electronic Mall—just type GO SDA and shopping for software will never be the same again!

CIRCLE 043 ON READER SERVICE CARD



SUPER VALUES

COMPUTER DIRECT

A DIVISION OF PROTECTO ENTERPRIZES

SAVE

SINGLE SIDED/DOUBLE DENSITY DISKS

.29 ea.

100% Certified 5¼" floppy disks. **Lifetime Warranty,** automatic lint cleaning liner included. 1 Box of 100 $29.00 List $1.99 ea. **SALE $.29 ea.**

ATARI WRITER WORD PROCESSOR

SALE $ 49.95 List $99

Write papers, reports, schoolwork, ect. quickly and efficiently with the No. 1 Atari word processor with spelling checker. Make changes with preview modes. Features included: full screen editing, double column printing, page no.s, headers-footers, centering, condensed, elongated, margin setting, underling search and replace and much more. (Disk) List $99.00 **SALE $49.95**

JOYSTICK SALE

SALE $ 16.95 List $24.95

This Pro 5000 with microswitches has been rated No. 1 in joysticks. Arcade Quality. List $24.95 **SALE $16.95**

FLIP—N—FILE

SALE $ 14.95 List $24.95

Everyone needs a floppy disk secretary. Dust and dirt can hurt your disks. Proper filing and protection of you disk collection will reduce unnecessary wear and tear. Flip-N-File holds over 70 disks in one easy to find, protective filer. List $24.95 **SALE $14.95**

SOFTWARE

ACCESS

ACTION PACK (D)	$14.95
LEADER BOARD (D)	$24.95

ACCOLADE

FIGHT NIGHT (D)	18.95
HARDBALL (D)	18.95

ACTIVISION

ON TRACK RACING (D)	$15.95
STAR LEAGUE BASEBALL (D)	15.95
SPACE SHUTTLE (D)	15.95
HACKER (D)	15.95
MIND SHADOW (D)	15.95
MASTER OF THE LAMPS (D)	15.95
GREAT AMERICAN CROSS COUNTRY RACE (D)	15.95
GHOSTBUSTERS (D)	19.95

BATTERIES INCLUDED

HOME PACK (D)	$19.95
PAPER CLIP (D)	29.95

BRODERBUND

PRINT SHOP (D)	$25,95
PRINT SHOP COMPANION (D)	22.95
GRAPHICS LIB. 1,2 or 3 (D)	15.95
KARATEKA (D)	18.95

COSMI

CAVERNS OF KHAFKA (D)	$12.95
TALLADEGA (D)	12.95
BEYOND FORBIDDEN FOREST (D)	12.95
MASTERS OF TIME (D)	12.95
AZTEC CHALLENGE (D)	4.95
E FACTOR (D)	4.95
CRYPTS OF PLUMBOUS (D)	4.95
SPIDER INVASION (T)	4.95

DATA SOFT

MR. DO (D)	$9.95
PAC-MAN (D)	9.95
DIG DUG (D)	9.95
POLE POSITION (D)	9.95
CONAN (D)	9.95
NEVER ENDING STORY (D)	18.95
MERCENARY (D)	18.95
221 B BAKER STREET (D)	18.95

ELECTRONIC ARTS

ONE ON ONE (D)	$9.95
PINBALL CONTRUCTION (D)	9.95
MUSIC CONSTRUCTION (D)	9.95
RACING DESTRUCTION (D)	9.95
AGE OF ADVENTURE (D)	9.95
SUPER BOULDERDASH (D)	9.95
SEVEN CITIES OF GOLD (D)	9.95
M.U.L.E. (D)	9.95
GOLDEN OLDIES (D)	19.95
MOVIE MAKER (D)	22.95
OGRE (D)	26.95
CHESSMASTER (D)	26.95
LORDS OF CONQUEST (D)	22.95

EPYX

PITSTOP II (D)	$5.95
DRAGONRIDERS OF PERN (D)	9.95
BALL BLAZER (D)	12.95
RESCUE ON FRACTULUS (D)	12.95
THE EIDOLON (D)	12.95
JUMPMAN (D)	14.95
WORLD KARATE CHAMP (D)	18.95
SUMMER OLYMPIC GAMES (D)	22.95

GAMESTAR

ON TRACK RACING (D)	$15.95
STAR LEAGUE BASEBALL (D)	15.95
STAR BOWL FOOTBALL (D)	15.95

HAYDEN

SARGON II (D)	$9.95
SAT VERBAL MODULE (D)	14.95
SAT MATH MODULE (D)	14.95
SAT PRACTICE TEST (D)	14.95

HI—TECH EXPRESSIONS

CARD WARE (D)	$7.95
HEART WARE (D)	7.95
PARTY WARE(D)	9.95
WARE WITH ALL KIT (D)	9.95
JINGLE DISK (D)	5.95
HOLIDAY PRINT PAPER (D)	7.95

INFOCOM

MOONMIST (D)	$24.95
BALLYHOO (D)	24.95
HITCHHIKER'S GUIDE TO THE GALAXY (D)	22.95
WISHBRINGER (D)	22.95

S.S.I.

BATTLE OF ANTIETAM (D)	$32.95
GETTYSBURG (D)	34.95
MECH BRIGADE (D)	34.95
NAM (D)	23.95
U.S.A.A.F. (D)	34.95
KAMPFGRUPPE (D)	34.95
SIX GUN SHOOTOUT (D)	23.95
CARRIER FORCE (D)	23.95
FIELD OF FIRE (D)	23.95
IMPERIUM GALATUM (D)	23.95
BROADSIDES (D)	23.95
COMPUTER QUARTERBACK (D)	23.95
COUMPUTER BASEBALL (D)	23.95
COLONIAL CONQUEST (D)	23.95
COMPUTER AMBUSH (D)	32.95

XLENT

TYPESETTER (D)	$21.95
RUBBER STAMP (D)	18.95
PAGE DESIGNER (D)	18.95
P.S. INTERFACE (D)	18.95
1ST XLENT WORD PROCESSOR (D)	18.95
MEGAFONT (D)	16.95

PEACHTREE

GENERAL LEDGER (D)	$37.95
ACCOUNTS RECEIVABLE (D)	37.95
ACCOUNTS PAYABLE (D)	37.95

AMERICAN EDUCATIONAL COMPUTER

BIOLOGY FACTS (D)	$9.95
ELEMENTARY SCIENCE FACTS (D)	9.95
U.S. GEOGRAPHY FACTS (D)	9.95
U.S. GOVERNMENT FACTS (D)	9.95
U.S. HISTORY FACTS (D)	9.95
WORLD GEOGRAPHY FACTS (D)	9.95
WORLD HISTORY FACTS (D)	9.95
FRENCH VOCABULARY SKILLS (D)	9.95
SPANISH VOCABULARY SKILLS (D)	9.95
AEC SPELLING (D)	19.95
LEARN TO READ (D)	19.95
READING COMPREHENSION (D)	19.95

DESIGNWARE

SPELLAKAZAM (D)	$9.95
TRAP-A-ZOID (D)	9.95
SPELLAGRAPH (D)	9.95
MATH MAZE (D)	14.95
CRYPTO CUBE (D)	12.95
SPELLICOPTER (D)	14.95
MISSION ALGEBRA (D)	24.95
BLUE CHIP TYCOON (D)	14.95
BLUE CHIP MILLIONAIRE (D)	14.95

FISHER PRICE — BUY 1 GET 1 FREE

LINKING LOGIC (C)	$9.95
DANCE FANTASY (C)	9.95
MEMORY MANOR (C)	9.95
LOGIC LEVELS (C)	9.95

MINDSCAPE

BANK STREET WRITER (D)	$25.95
CROSSWORD MAGIC (D)	29.95
THE HALLEY PROJECT (D)	22.95

SPINNAKER — BUY 1 GET 1 FREE

DELTA DRAWING (C)	$9.95
FACEMAKER (C)	9.95
KIDS ON KEYS (C)	9.95
DELTA DRAWING (C)	9.95

SYNAPSE

MINDWHEEL (D)	$19.95
ESSEX (D)	19.95
SYNCALC (D)	29.95
SYNCALC TEMPLATES (D)	14.95

WEEKLY READER

PICTURE BUILDER (D)	$14.95
STICKYBEAR BOP (D)	14.95
STICKYBEAR NUMBERS (D)	14.95
STICKYBEAR BASKET BOUNCE (D)	14.95
STICKYBEAR OPPOSITES (D)	14.95
STICKYBEAR ABC (D)	14.95
STICKYBEAR SHAPES (D)	14.95

BEST SERVICE IN THE U.S.A. • 90 DAY REPLACEMENT WARRANTY • ONE DAY EXPRESS MAIL • 15 DAY FREE TRIAL • OVER 500 PROGRAMS • A CUSTOMER LIST OF OVER 3,000,000 LARGEST IN THE U.S.A.

CALL FOR FREE CATALOG WITH $2.00 OFF COUPON!

PHONE ORDERS

8 a.m. - 8 p.m. C.S.T. Weekdays

9 a.m. - 12 noon C.S.T. Saturdays

(312) 382-5244

Add $3.00 for shipping, handling, and insurance. Illinois residents please add 6½ % sales tax. Add $6.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. All orders must be in U.S. Dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA. Enclose Cashier Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail. Prices & Availability subject to change without notice. Hardware shipping prices vary according to weight. Please call for amount. (No APO-FPO for monitors)

VISA—MASTER CARD—C.O.D. C.O.D. on phone orders only.

OUR COMPANY WARRANTY

All of our products carry a minimum 90 day warranty. If anything fails within 90 days from the date of purchase, simply send your product to us via United Parcel Service prepaid. We will IMMEDIATELY send you a replacement at no charge via United Parcel Service prepaid. This warranty proves that ***We Love Our Customers.***

ATARI® 8-BIT POWER

ALPHA SYSTEMS is constantly innovating to provide more power for your 8-bit Ataris.

You don't need an ST to run high-powered software. Your Atari 400, 800, 800XL, 1200XL or 130XE can compute circles around others with these quality packages. – Don't let our low prices fool you – Super Quality doesn't have to be over priced.

DIGITIZE YOUR WORLD Now you can connect your Atari to a wide range of external interfaces that you can build. This how-to book (over 150 pages) includes all the instructions needed to build a light pen, household appliance controllers, alarm systems, light and motion detectors, voice recognition, and much, much more. The book **Your Atari Comes Alive** includes detailed schematics and instructions for each device. The disk includes the BASIC and Assembler programs to run them. Create your own exciting devices and save money!

Your Atari Comes Alive – Introductory Price **$24.95**

PARROT

DIGITIZING POWER

The hardware & software you need to digitize real world sounds and play them on your computer. Make your Atari speak in your own voice record and play sounds from a complete orchestra. Play the digitized instruments and sounds from your keyboard, or put them in your own BASIC programs. PARROT is now being used for special effects by professional musicians. Turn your Atari into a digital sound sampler and keyboard. Everything you need to record and play digital sounds **$39.95**

Additional pre-recorded sound tracks **$4.95**/with purchase of PARROT.

COMPUTEREYES™

Feed the pictures from your video camera or VCR into your computer and save the images as a graphics screen. Put your picture in your own programs, or digitize your favorite movie star.

Our COMPUTEREYES and MAGNIPRINT II+ combination special lets you print your pictures in 16 shades of grey with incredible detail. Combine the features of MAGNIPRINT II+ and COMPUTEREYES for digitizing power that can't be beat. Koala Pad, Touch Tablet compatible.

COMPUTEREYES and MAGNIPRINT II+ **$ 119.95**
COMPUTEREYES only **$ 99.95**
COMPUTEREYES, B/W VIDEO CAMERA, MAGNIPRINT II+, and CABLE **$329.95**
GRAPHICS 9 CAPTURE SOFTWARE **$ 12.00**

MAGNIPRINT II+

Easily the most powerful and versatile printer package available. Accepts screens from Koala Pad, Print Shop, RAMbrant, MicroPainter, SynGraph, Touch Tablet, Typesetter, Graphics Master, many, many others. Prints in literally hundreds of sizes, shapes, shades, and distortions, including 6 ft. poster printing. Create detail and resolution thought impossible on a standard dot matrix printer. Supports 16 shades of grey and even color printing (you need color ribbons or color carbons for that). Touch-Up your pictures with multi-size and multi-font text. Works on STAR, Gemini, Panasonic, CITOH, NEC, EPSON or compatible printers. (850 interface or equivalent required).

Incredibly priced for only **$24.95**

Free BONUS with every MAGNIPRINT II+ – PRINTALL prints your programs and files with all Atari inverse and graphics characters.

GRAPHICS TRANSFORMER Create Print Shop icons from your favorite drawing program, a ComputerEyes digitized photo, or saved picture files. Create, Merge, Shrink, or Enlarge to transform your graphics from one to another. Transfer pictures between programs to use the features you need.
ONLY **$22.95**

IMPERSONATOR

Cartridge to Disk copy system. Create running back-ups of any cartridge (up to 16K) on Disk. ONLY **$29.95**

THE Scanalyzer

Extract the programming secrets for any Atari program. Scanalyzer easily breaks through protection to let you list and study programs. Works with programs on Disk or Cartridge, finds hidden directories, detects copy protection methods and more. ONLY **$29.95**



PROTECT YOUR PROGRAMS AUTOMATICALLY COPY PROTECTION METHODS EXPOSED



Now the state of the art secrets of software copy protection, piracy, phone phreaking, and hacking are revealed. These comprehensive book and disk packages take you from a novice to an expert in this fast changing field. Everything you need to understand complex protection, and create your own custom methods. Topics include, Unstable Sectors (Phantom or Fuzzy Sectors), Forced CRC Errors, Overfilled Tracks, Short Sectoring, Hardware Data Keys, Cartridge Protection, Cassette Protection, Crackdown on Priates, New Laws Dealing with Piracy, Hacking, On-Line Security, Phone Phreaking, Building Black Boxes, Pirate Bulletin Boards Systems, Trojan Horse Programs, Logic Bombs, Self-Destructing programs, much, much more.

The disks included with these books contain powerful utilities to let you automatically protect your files. Features include;

- Automatic directory hiding
- Data encryption (stops pirates from changing your copyrights, etc.)
- Limited use option (makes the program self destruct after a limited numbe of runs)
- Password option (requires an 8 byte password before the program will run)
- Disk Protection check (have your program check disk protection before running)

Use these methods and more automatically, with no programming skills needed.

BOOK I and DISK I $24.95
BOOK II (Advanced protection) and DISK II $24.95
Special limited time offer – BOTH SETS for $39.95

24 HOUR HOTLINE (216) 374-7469

VISA or MasterCard Welcome. Call or Write for our Free Catalog
Customer Service (216) 688-9014 9am-3pm EST M-F
*All for Atari Disk Drive at least 48K required

Order by phone or send check or money order to:
ALPHA SYSTEMS
4435 Maplepark Rd.
Stow, OH 44224
Include $3.00 shp & hdlg (US & Canada). Ohio residents add 5½% sales tax. Foreign orders add $8.00 shipp & hdlg.

BONUS: Order any 3 programs and get FREE your choice
☐ Deluxe Space Games ☐ Utility Pack 1000.

ALPHA SYSTEMS

BY GREGG PEARLMAN, ANTIC JUNIOR EDITOR

TACE

Serving 500 square miles of Texas

TACE, the Temple Area Computer Enthusiasts, is located right in the middle of Texas. "I'd say we cover about 500 square miles," says TACE founder Jim Wesolowski, "but we also have members in other states and even in Germany. There's a lot of military around here, 285,000 troops in the area. Fort Hood itself is 323 square miles. Temple, on the other hand, has 42 people and is six miles from one end to the other." Temple residents used to go about 65 miles for the nearest Atari equipment, but a new full-fledged dealer has cropped up less than 40 miles away.



Wesolowski, confined to a wheelchair as a result of a tunnel explosion while serving in Vietnam, is now TACE librarian and system operator of the users group bulletin board, the Telephone Company. "I also belong to SAM, the Sysops' Association of the Metroplex," Wesolowski says. The Metroplex is the triangle between Waco, Temple and Killeen, including Fort Hood and Harbor Heights. "To give you an idea of how big the area is, one sysop drives 163 miles each way for our monthly meeting."

TACE *officially* meets at Wesolowski's home three times a month—some people drive over 100 miles round trip. But members stop by all the time. "It's an oddball arrangement," says Wesolowski. "I'm stuck at home all the time. So when people come for disk swaps or to learn something on the computer, 10 might show up on Saturday, 15 on Sunday—or whenever they can make it. They'll come any day of the week to learn whatever was taught at the last meeting."

Most TACE members are in the military, so the largest age group is between 18 and 34. However, TACE memberships cover an entire family, not just an individual. Including children, the total membership is about 400—of which some 103 families are primarily Atari users.

"I have non-Atari users over also," says Wesolowski, "though my only computer now is an ST. For instance, I worked with a couple of IBM users on C compilers." The A in TACE used

continued on next page

to stand for Atari, but the group now includes users of other personal computer brands. Previously there had been no groups for non-Atari users in the area.

TACE holds a major meeting every three months at Kwik-Fix Electronics, the only full-service Atari dealer in the area. Average attendance is around 160. TACE membership has grown about 22 percent a year since it began in 1983.

TACE BBS

The Telephone Company bulletin board runs on Wesolowski's one-megabyte 520ST, with a 20Mb Atari hard disk and MichTron BBS software (rev. 2.0). The BBS is online from 5 p.m. to 10 a.m. on weekdays, 24 hours on weekends and holidays.

"We have about 8Mb of MIDI music and graphics online—they're the major push," says Wesolowski. "We have 1Mb—108 titles—of Activision Music Studio files and 3.5 megs of Hybrid Arts EZ Track MIDI songs. In fact, Hybrid Arts' own BBS doesn't even have half a megabyte—they call mine to get more music. We also have 2Mb of DEGAS and NEOchrome pictures."

The Music Studio material ranges from "The William Tell Overture" to "Rhapsody in Blue" to Broadway showtunes and the "Hooked on Classics" series. All music and graphics files on this BBS have been compressed as much as possible with ARC (short for Archiver) public domain software found in such online services as GEnie and CompuServe. ARC compresses 330,000 bytes of Hybrid Arts programs to 64,000, and it crunches NEOchrome pictures from 32,000 bytes to 5,000.

"Forty-five percent of our callers are long distance—I even have callers from Ohio and California," says Wesolowski. The Telephone Company BBS is open to everyone. First-time callers have upload and download capability. Online time is limited to 35 minutes until users are validated and get boosted to 75 minutes.

TACE actually has five bulletin boards covering topics from computers to country-western music. Wesolowski's system just handles the Atari information—8-bit and ST. All the TACE systems run at 300 and 1200 baud. "Because the of the range of topics," says Wesolowski, "people usually call one BBS, then another and another. They don't usually hook up to just one."

Wesolowski updates TACE's online newsletter monthly. "We've channeled our energy into software reviews," he says, "and I've got online reviews of Haba, Michtron and Activision products. I'm limited to how much I can do at a time, though, because I have only one ST."

Antic first heard about the Telephone Company when it used to specialize in listing phone numbers for other bulletin boards throughout the country. This specialty was discontinued when it became too difficult to keep up with the constant changes in a list of 1,400 numbers.

> *Because TACE covers 500 miles, some members have to drive over 300 miles round trip, and BBS sysop Jim Wesolowski has to be on hand all the time*

TACE ACTIVITIES

TACE's president, Paul Fische, is the Chief of Recreation and Rehabilitation at a nearby Temple Veteran's Administration Medical Center and TACE is one of the few Atari users groups in the United States with the VA as a member.

"We help the VA hospital with 8-bit computers," says Wesolowski, "which they use in a nursing home for recreation and rehabilitation in terms of such things as hand-eye coordination after strokes. We also work with the Muscular Dystrophy Association and have a hotline modem pledge system for the Jerry Lewis Telethon."

Another group member is Temple Junior College, which holds an annual continuing education class that covers various computers and modem operation. TACE is also a charter member of the Worldwide User Network and has started a bulletin board association against piracy.

TACE SURVEY

TACE supplied the following survey information. Of the 103 Atari-owner family memberships in TACE, 9.8 percent use STs and the remainder use 8-bit computers in this order: 800XL, 800, 130XE, 65XE and 1200XL. Atari 1050 and Indus GT disk drives are the most popular.

The most widely-used modems are the Avatex, Volksmodem, Atari, Supra (MPP) and Hayes. Twelve percent of the members use online services, primarily GEnie, CompuServe and Dow Jones.

About 6 percent of the TACE Atarians are active programmers, while another 12 percent program occasionally. Rankings for the favorite 8-bit languages are Atari BASIC, Microsoft BASIC and ACTION!. ST programmers favor C, ST BASIC and assembler, in that order.

The software types used most by members are ranked here in order of importance:

1. Business/Financial
2. Word Processing
3. Programming
4. Help for Handicapped
5. Education
6. Communications
7. Games
8. Robotics
9. Artificial Intellegence

TACE
Temple Area Computer Enthusiasts
3202 Las Cruces Drive
Temple, TX 76502
Bulletin Board: (817) 778-2506

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **271** ON THE READER SERVICE CARD.





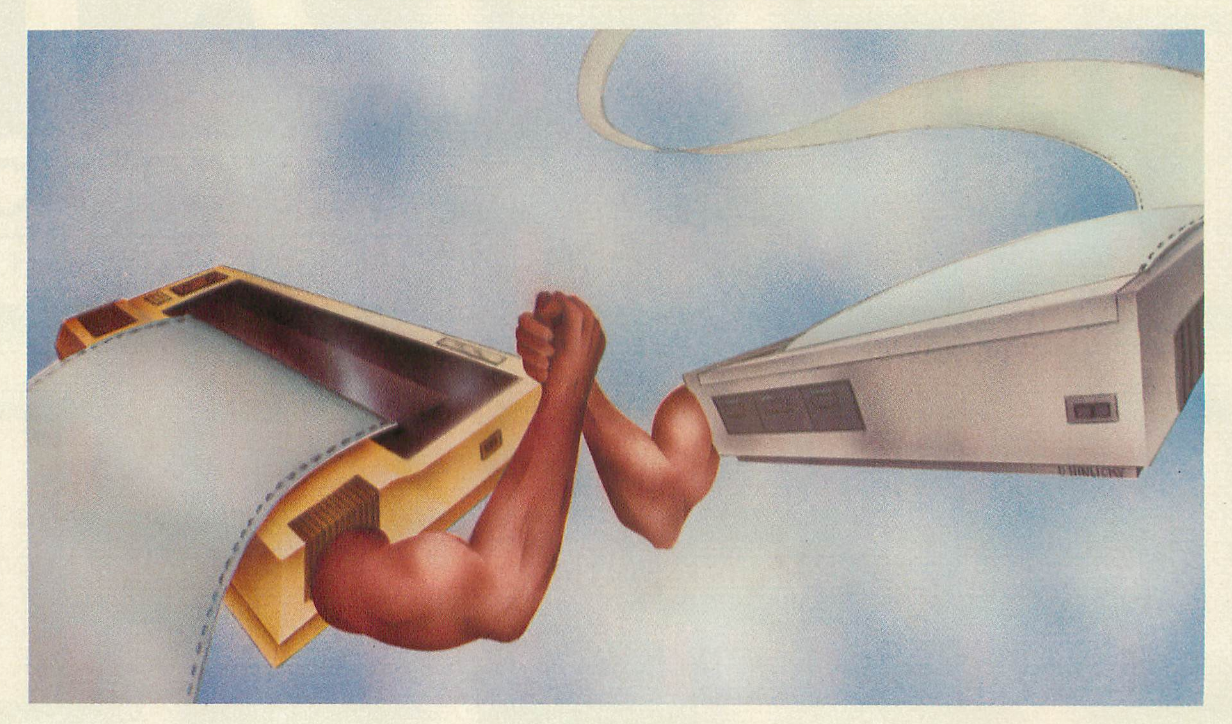
THE ST RESOURCE

ANTIC MARCH 1987

CONTENTS

ST Disk Subscribers: For instructions on how to transfer **Antic** ST programs to 3½-inch disk, see ST Help File on Side B of monthly disk. ST programs from previous issues are available in 3½-inch format from the Antic Catalog.

When Printers Get Down to Business



They Get With the XLEnt PRINTWARE SERIES

The 8–Bit Atari software that will really give the business to your Epson, Panasonic, Prowriter, Gemini, NEC, SG, Citizen or compatible printers.

Typesetter $34.95 By Dorfman & Young *

Get design freedom to create letterhead, posters, title pages, and more. Use the joystick or keyboard driven sketch pad to create and place clip art, logos and graphics anywhere on a page. Loads graphic, 7+/8 and Printware Series files and lets you control your printer, practically down to every dot on the page! Produce results that look almost professionally typeset. 48K/128K disk

Megafont II+ $24.95 By Dellinger & Rognlie *

A complete program lister and graphics dumper. This utility is used by most national Atari magazines to print out program listings for publication; but it's much more. Print graphics, 7+/8 and Koala screens, and Printware Series files in multiple sizes. Type direct from the keyboard to the printer in your own custom created fonts or one of the 17 fonts that can be down loaded to your printer. 48K disk

P.S. Interface $29.95 By Castell *

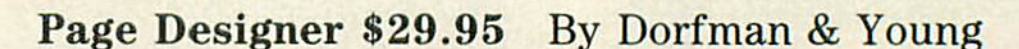
A value-added Print Shop™ interface utility that raises graphic output to new levels of clarity and compatiblity. Integrate Typesetter icons with Print Shop™ fonts and graphics. Convert Print Shop™ fonts to Typesetter icons and select from four sizes of output. Design custom Print Shop™ fonts and graphics with the P.S. Interface drawing program. 48K disk

Print Shop™ is a trademark of the Broderbund Company

*ST Versions Available

Page Designer $29.95 By Dorfman & Young

A layout utility that lets you plan an 8½" × 11" page on your screen and then print it. Mix text, graphics and Typesetter fonts for fantastic two-column newsletters. Two text modes; 40 column allows any Atari character set, 80 column puts twice as much information on the same page. Page Designer works with other Printware Series software. 48K disk



Rubber Stamp $29.95 By Dorfman, Young & Dellinger *

A collection of XLEnt creative utilities that let you build a library of high resolution icons, including converted Print Shop™ icons. Create up to four icons at once, and use the only 16×16 character set and text editors available for your Atari. Control the height and width of characters to get 32 different character sizes. Print up to 99 graphic labels with the special label printer. 48K disk

1st XLEnt Word Processor $29.95 By Castell

A fully featured, friendly and fast word processor. 1st XLEnt Word Processor uses a joystick and icon interface, has toggle between full-screen windows, and a very readable 80-column print preview to see what your document will look like. According to Antic Magazine's January '87 review, 1st Word is, "As good or better than any other word processor you'll find for the 8-bit Atari". 48K disk

P.O.Box 5228
Springfield, Virginia 22150
Order Number (703) 644-8881
Customer Service (703) 569-8881
TELEX 269728 XLENT UR

XLEnt Software

XLENT Software [U.K.] (LTD.)
516 Alum Rock Road, Alum Rock
Birmingham B8 3HX, United Kingdom
(021) 327-6110
TELEX 265871 (MON REF G)

CIRCLE 065 ON READER SERVICE CARD

USING INP AND OUT

Create a terminal program in ST BASIC

by ALEX GOLITSIS

There are two mysterious commands in ST BASIC that are perhaps the most powerful, but least known. They allow you to print text to your printer, or even communicate with other computers. The commands are INP(x) and OUT x,y.

For communicating with the outside world, nothing beats this pair. INP is short for INPut, and OUT, of course, is short for OUTput. These are the two basic, primary functions that a computer performs. It inputs to gain information, and it outputs to send information.

Chart 1 shows the values that x can be in INP(x) or OUT x,y. You would probably guess from the chart that 4 takes input from your ST's keyboard, right? Wrong. The consol (2) takes care of both screen output and keyboard input. The "keyboard" refers to the virtual keyboard, not the physical one that you type on.

Have you ever wanted a screen to wait for the user to hit a key before continuing? Well, INP is one way to accomplish this. Since you want the user to hit a key on the keyboard, we use assignment number 2 (console). To check the status of the character buffer for any of the devices, use its negative. It will return zero if there is no character, or -1 if there is a character waiting in the buffer.

So to check if someone has hit a key, you would say:

```
1000 IF INP(-2)<>-1 THEN 1000
```

This should keep BASIC busy until someone hits a key. Unfortunately, though, there is a hitch. GEM's "Desktop" interaction, consisting of the mouse pointer and key buffering, steals almost all of the characters before line 1000 can get to them. All is not lost, though. It is as easy as turning GEM's "Desktop" interaction OFF with the following command:

```
POKE SYSTAB+24,1
```

And to turn it back on,

```
POKE SYSTAB+24,0
```

So, we can now use our original line in a subroutine at the end of your program. We can label it "KEYIN". Here's how it looks:

```
KEYIN:
POKE SYSTAB+24,1
A=0
WHILE A<>-1
A=INP(-2)
WEND
POKE SYSTAB+24,0
RETURN
```

This subroutine can now be called with a GOSUB KEYIN any time you would like the user to hit a key to continue in your program.

Now that you have the basics of INP, I can introduce you to its sister, OUT. OUT does the opposite of what INP just did. Instead of taking in a character, OUT sends out a character to any of the devices in Chart 1. The format is identical, but you cannot check the status through OUT because it is up the the program to supply the characters this time. Let's send the characters "HI" to your printer.

```
OUT 0,72
OUT 0,73
OUT 0,13
```

For those of you who haven't memorized the ASCII values for every character, 72 is decimal for "H" and 73 for "I". 13 is a carriage return, inserted because many printers with buffers won't print until they receive one.

At this point, you may be asking, "Hmm. . .What would happen if I sent a character to the screen through OUT? Will it show up in the OUTPUT window?" Hmm indeed. Let's try it.

```
OUT 2,72
OUT 2,73
```

(Notice we don't need the carriage return this time.)

What happened? Instead of looking through all of the windows for "HI", focus your attention to the top left corner. After Debug on the menu bar, the letters HI have appeared!

By now, some of the implications of these commands might be running through your head. "If I can get two characters on the screen, I must be able to fill the whole screen with my own text". You can, if you do it carefully.

continued on next page

One of the assignments we haven't used yet is number one, the RS-232 port. This is where your modem plugs in. If a little lightbulb just lit up above your head, you're not alone. Now that we can control incoming and outgoing text to the modem, who is going to stop us from writing an ST BASIC terminal program? Or even a Bulletin Board System (BBS)? The answer is no one.

Before we go on, first realize that the all-text part of the ST's operating system uses the VT52 standard terminal. If you have studied the table of escape sequences for the VT52 that have been published in some books, you might have noticed some very exciting features. But if you recall, the screen isn't cleared by an ASCII 12 like most terminals, but rather an [ESCAPE] (ASCII 27) followed by the capital letter E (ASCII 69). Since OUT 2 utilizes VT52 codes, sending these characters through OUT 2 should clear the whole ST BASIC screen. If you try it, you will definitely agree that it does. Windows, drop-down menus and even the grey background have all disappeared. But if you have just entered these lines in COMMAND mode, you will notice that moving the mouse, hitting keys, and dropping menus seems to have a rebuilding effect. You cannot, unfortunately, have the ST BASIC Desktop back in perfect condition without re-booting. You will also notice that the characters you now type are not appearing at the top of the screen with our "HI", but rather back in the COMMAND window.

With this knowledge, we should be able to make a short program that echoes every character you type to the blanked-out screen (and not the OUTPUT or COMMAND windows). The following program will do just that:

```
1000 ON ERROR GOTO 5000
1010 POKE SYSTAB+24,1
1020 OUT 2,27:OUT 2,69
1030 CHAR.IN=0
1040 WHILE CHAR.IN<>13
1050 A=0
1060 WHILE A<>-1
1070 A=INP(-2)
1080 WEND
1090 CHAR.IN=INP(2)
1100 OUT 2,CHAR.IN
1110 WEND
5000 POKE SYSTAB+24,0
5010 END
```

What you type will be shown on the first line of the screen (normally the menu bar) and will continue along until you hit [RETURN].

The ON ERROR GOTO 5000 is included just in case you make a typing error. All errors are fatal unless you trap them because with GEM's interaction turned off, you have no way of talking to ST BASIC, which is a GEM application. If we hadn't included the ON ERROR GOTO and we had made a mistake typing, we would have had to reset the ST.

With this small program, we can send a line of text to the screen, the printer, or even the MIDI port. Or we could have sent it to the modem.

The modem works just like the keyboard. If a character has come through, a -1 will be returned from INP(-1). If no characters are available, a zero will be returned. OUT also works the same with the modem. If you would like to send a character to the modem, OUT 1,(ASCII VALUE) will do it. With this information, we could go about writing a very short terminal program in ST BASIC that, for starters, will be very similar to the VT52 Desk Accessory. But there is one major difference: you cannot customize the VT52 desk accessory.

The main escape codes are listed in Table 2. Most of them we will not need for our terminal, but some will be very important. We definitely need to see the cursor, and word wrap will come in handy (this allows text to flow onto another line if it exceeds 80 columns). We must organize our program into a smooth-flowing, well-structured application if we want it to keep up with the demands of high-speed telecommunication.

Table 2.

VT-52 Escape Codes

ESC A	CURSOR UP
ESC B	CURSOR DOWN
ESC C	CURSOR RIGHT
ESC D	CURSOR LEFT
ESC E	CLEAR HOME
ESC H	CURSOR HOME
ESC p	REVERSE ON
ESC q	REVERSE OFF

The "main" loop will consist of two IF's: one to check for an incoming character, and the other to check for an outgoing character. With some thought, trial, and error, I found out that giving priority to an incoming character (checking INP(1) first) was the best method. Otherwise, every time you enter text before a prompt has been reached (storing it in the buffer of the host computer), the incoming text being printed to the screen pauses.

These two IF's must then call two other subroutines. These subroutines should handle special characters, and finally process the information.

Special characters to watch out for would be keys that you hit on the keyboard that will serve a function on your side of the terminal. What leaps to mind is the [UNDO] key, which is well-suited for handling the QUIT function. When you hit [UNDO], you don't want its value sent over to the host, so you must trap it before you send it.

Let's trace a character as it goes through the system. If I hit a key, INP(2) will pick it up. If it is not a reserved key, it should be sent to the modem with OUT 1,(value). Likewise, if a character is coming in, INP(1) will receive it, and it should be printed to screen with OUT 2,(value). These two operations are reciprocals.

Good luck, and happy telecomputing!



ST PUZZLER

A jigsaw puzzle generator for your ST

by David J. Bohlke

ST Puzzler is a simulation which will generate a random jigsaw puzzle for you to solve. A scoring routine will allow you to compete against your own best score on each new puzzle. You also have the option of changing the puzzle pattern so that you can adjust the difficulty level of the game.

To begin you will need to type in the ST BASIC listing. Be sure to save a copy or two to disk before you run the program. It is also necessary to set the display to low resolution from the control panel. If you have a monochrome-only display, you can try placing random patterns in the puzzle, as described later.

When you run the game, the random puzzle to be solved will be displayed in the bottom-right corner of the screen. The left two-thirds of the screen will show an 8×6 grid in which you will place the pieces in the puzzle. The piece you will need to place in the puzzle each turn will be randomly selected; and shown in actual size in the upper-right corner of the display. Each of these pieces and the completed puzzle grid are nine times as large as the original puzzle that you will be completing.

There are four types of prompts which will be printed in the OUTPUT bar on the top of the screen. When the computer is selecting a piece for you to place in the grid, and plotting the piece in the upper right of the screen, the message "Selecting piece" will be displayed. Then it will be time for you to place the piece in the puzzle, and the prompt "Click to Grid" will be shown. To place the piece, use the mouse to move the pointer to the location in the grid you think the piece belongs, relative to the original puzzle from the lower right of the screen, then click the left mouse button.

If you are accurate in your selection, the message "CORRECT" will be shown; and if you miss the appropriate grid square the message "INCORRECT" will be printed. Each of the four prompts will also indicate your current score. The "CORRECT" signal also displays the number of right and wrong pieces you have attempted. When your placement is accurate, the piece will be put in the large grid that you pointed to with the mouse. When you are wrong, the piece to place will be erased, and a new random piece will be chosen.

The maximum score is a perfect 4800, with any score over 4000 exceptional.

The scoring routine considers the number of right and wrong placements, and a timing factor. The timing counter begins when the piece to place in the upper right corner is completed, and ends when you click the mouse to pick your square. You can only click the mouse when the prompt "Click to Grid" is displayed. The maximum score is a perfect 4800, with any effort over 4000 exceptional.

Each puzzle is made up of random ellipse segments. Currently, the pieces are filled with the pattern labeled (2,7) on page C-21 of the ST BASIC Sourcebook. These numbers are engaged using the color statement in program line number 240. Notice the order used in the statement is 7,2. Using other patterns here is one way that you can increase or decrease the difficulty level of the jigsaw puzzle. If you do not have a color display, you might try using a rnd*24 to pick a random pattern for each different ellipse drawn in the puzzle.

I really enjoyed writing Puzzler and experimenting with the different color combinations and patterns. After you are accustomed to play, you might try altering the elliptical shapes to boxes, circles, lines, or triangles. If jigsaw puzzles are one of your hobbies, you now have billions of options to enjoy.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **285** ON THE READER SERVICE CARD.

Listing on page 97 

ST PRODUCT NEWS

ST Reviews

ST POOL
Shelbourne Software Systems
7221 Rising Sun Ave. Suite #191
Philadelphia, PA 19111
215-725-5644
$39.95

8-BALL
MichTron Inc.
576 S. Telegraph
Pontiac, MI 48053
313-334-5700
$34.95
CIRCLE **277** ON READER SERVICE CARD

Reviewed by Rick Teverbaugh

The game of pool is likely to experience a comeback, especially with the Fast Eddie Felson character Paul Newman created in "The Hustler" returning in Martin Scorsese's hit movie "The Color of Money." However, for those who prefer keyboard and mouse in the comfort of home to wooden cue and green felt table in a smokey pool hall, you have two choices of pool programs for your ST.

8-Ball and **ST Pool** are distinctively different programs, in that the scope of each game is drastically different. 8-Ball is limited to just that game of pool, while ST Pool gives you the table, cues and balls, inviting you to play whatever game that strikes your fancy. With ST Pool, you can create your own rack of balls, making it easy to play 8-Ball, 9-Ball, Rotation or whatever. 8-Ball keeps track of which player is up, and lines the balls sunk behind that player's name. ST Pool presents beads at the top of the table to keep score manually; otherwise the program doesn't care which player is up.

There are advantages and disadvantages to each program. For example, 8-Ball limits the options of games available. True pool afficionados will likely favor this plan because they will be used to keeping score manually, so that chore won't seem unusual. But to the veteran computer gamer, it will seem too much trouble. Computer users are accustomed to the machine doing the dirty work, leaving them to have fun. 8-Ball tells which player is up, keeps track of scratches and much more.

At the beginning of the program, 8-Ball asks what will constitute a scratch. The choices are: hitting the ball off the table (yes, it's possible), not hitting a ball, hitting opponent's ball first, shooting backward after a scratch, and failing to cushion a ball. At game's end, the program will then deliver some specific information about each player's game. That data includes the number of shots, the number of turns, the number of scratches and the longest run of balls in one turn.

There are also other differences in the way each program executes the game of pool. The most unusual of these is in ST Pool. First, you have to position the pool cue with the tip over the white ball, using the mouse. Then, you use the mouse or the Control and Tab keys to aim the stick. In the most difficult mode, it is necessary to use line-of-sight vision to gauge where the ball will go. There is another option which projects a dotted line down the table, making it easier to judge when the shot is lined up properly.

After that, just executing the shot is no picnic. You have to hold the left mouse button down while drawing the mouse towards you to prevent changing your aim. This movement also pulls the cue stick away from the ball. Also, controlling how hard the ball is hit is accomplished in a novel manner. It doesn't matter how far the stick is away from the ball, the strength of the shot depends on the speed of the mouse movement back towards the ball. To develop a nice touch on the table will take hours of practice.

However, ST Pool will enable you to make some shots that would be impossible with 8-Ball. A box at the lower right-hand side of the screen shows the cue ball. A crosshair on that ball will help control the action of the cue ball when it hits the object ball. That makes it easier to position the cue ball on the table to set up a second shot.

The entire process is simplified in 8-Ball. The mouse moves the cue and controls the aim around the cue ball. A dotted line projects forward to aid your aim. The farther the stick is drawn back from the ball, the more force will be applied to the shot. You

can get a normal strength shot by using the left mouse button. The right mouse button will give a force about four times greater than the left, and is designed to be used mostly on the opening break shot.

8-Ball also avoids a problem that plagues ST Pool. Since 8-Ball only involves shooting at solid-colored balls or stripes and then the eight ball, all that is necessary for the table display is that you be able to tell the solids from the stripes and identify the eight ball. On the other hand, when you play Rotation, you have to be able to tell the number of the ball. That type of definition just isn't possible on a table cluttered with up to 16 balls at one time. ST Pool assumes you'll know which color the number one ball is, number two and so on. (Later versions of the game have a rules addendum on the disk you can print out and keep by the keyboard to aid in ball identification.)

There are some added touches on ST Pool that aren't really necessary, but are fun to toy with. You can change the table color, for instance. (Fortunately, it never gets dirty or worn.) Also, you can alter the size of the boxes containing the table and other options can be changed to suit your tastes.

That only leaves the action of the balls on the table as a means for comparison. Overall, 8-Ball has the most realistic action, although even it falters a bit when the cue ball goes crashing into a pack of closely-clustered balls. 8-Ball evidently handles each contact individually or in pairs, so it is almost a stop-action sequence until all the contact ends. However, the roll of the balls is smooth and realistic. Since there are many angle options for shots, it is less difficult to line up a shot.

ST Pool makes much more exacting demands for making shots. In the practice, one-player mode, it will take almost twice as long to clear the table in ST Pool as it will in 8-Ball. Also, the ball movement isn't quite as lifelike. On one shot, I had two object balls bounce off each other, go to opposite bumpers and then back to hit each other again. That process

continued on page 70



START
ATARI
SF314
START
ST SOFTWARE
ATARI
1040ST

BASIC ALERT

Creating alert boxes in ST BASIC

by Ron Schaefer M.D.

One of the most valuable and user friendly parts of the ST's GEM operating system is the alert box. The alert box is a very familiar object to the ST user. It's that rectangle that pops up in the middle of your screen, usually before you are about to make a change to your file. It can ask you to make decisions (such as EXIT, CANCEL, etc.) simply by clicking your mouse button on another "button," actually, a smaller rectangle at the bottom of the alert box.

To create an alert box using ST BASIC is a relatively simple matter. For instance, you can pass some parameters to a subroutine which will then do all the dirty work (PEEKing and POKEing). The alert box or the GEMSYS(52) call, is part of the Application Environment Service, or AES for short. Before using any AES application you must first initialize a few variables, as demonstrated in the subroutine called INITAES. These variables are set equal to constants and need to be defined only once in a program, but this must be done before you attempt to make any GEMSYS calls. Not all of these variables are used by every AES application, but I have found it easiest to initiate them all at once, then forget about them.

Let's walk through the program. Line 10 is a comment. Line 20 calls the subroutine INITAES, and opens and clears the output window. Line 30 sets the type of icon that will appear on the left side of the Alert box. I did this by setting the string variable TYPE$ equal "1", the exclamation mark, "2", the question mark, "3", the stop sign, or blank " ", which prints nothing. Also, in line 30 the text appearing in the alert box is set equal to the string variable TEXT$. According to ST reference books, you can have up to five lines of text, each line up to 40 characters long. However, whenever my text got over 4 lines long or over 30 characters per line my system started crashing, so I kept within these constraints.

To create an alert box using ST BASIC is a relatively simple matter.

The string TEXT$ can be more than one line long, each line separated by a "|", a character you get by pressing [SHIFT]\ This "|" serves the function of a carriage return, telling the alert box to start a new line. Text should not contain square brackets "[", or "]" since these have special meaning to the GEMSYS(52) routine.

In line 40 the text appearing in the buttons is set equal to the string BUTTON$. There can be from one to three buttons, with a maximum of 20 characters total. The different buttons are separated by a "|". Also in line 40 the default button is set. If it is set equal to 0 there is no default, otherwise one of the buttons is highlighted, and when a carriage return is pressed it has the same function as clicking on that particular button. Line 50 calls the subroutine DOALERT. Lines 60 through 80 print out a message, depending on which button you click.

The subroutine DOALERT starts on line 120. Line 130 sets a double precision variable "N#" equal to the memory location where the parameters must be POKEd in order to create an Alert box. Line 140 sets the default button as explained above. Line 150 generates the string ALERT$, which is a concatenation of the variables TYPE$, TEXT$, and BUTTON$, separated by square brackets. In line 160 the command VARPTR pokes the address of the string variable ALERT$ into the spot where the GEMSYS(52) routine will look for it. Line 170 calls the routine to generate an alert box. Finally, line 180 looks for which button you clicked and sets it equal to the variable CHOICE. A word of caution: When using GEMSYS commands it is very helpful if you frequently save your program. These commands are very finicky, and if they are not executed perfectly, they have a tendency to lock up or crash the system.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **287** ON THE READER SERVICE CARD.

Listing on page 98 

repeated itself twice before the balls finally lost momentum and came to a stop.

Though each program has individual strengths and weaknesses, if you don't mind being limited to just 8-ball, I think that either program is a satisfactory choice for ease of use, and sophisticated pool playing. Rack 'em up!

TIMEKEEPER

Navarone Industries
21109 Longeway Road, Suite C
Sonora, CA 95370
(209) 533-8349
$39.95

CIRCLE **262** ON READER SERVICE CARD

Reviewed by Patrick Bass

Looking for a battery-backed ST clock but don't want to lose the use of your cartridge port? The **Timekeeper** by Navarone Industries is just what you had in mind. The Atari-silver Timekeeper plugs into the Atari ST cartridge port, but provides a "feed-through" cartridge slot to allow the Timekeeper to remain installed when using other cartridges.

The Timekeeper comes with the correct time and date already programmed in. Along with the cartridge, Navarone provides software on disk which includes a desk accessory clock and a standard .PRG time-setting program.

On powerup, the software automatically gets the time and date from the Timekeeper and sets the ST internal clock. Then it disengages itself. Your files will always be properly time-and date-stamped. No more guessing when the last update was. The desk accessory clock includes an "Alarm Clock" function, which you set to the time you desire the alarm to sound. When the alarm trips, the desk accessory pops up on the screen and a warbling two-tone alarm comes ringing out of the video speaker.

The built-in battery should last upwards of ten years. I've had Timekeeper plugged in for over a week now, and haven't lost a second. If you need a battery clock, but also need to keep your cartridge port, look long and hard at this $39.95 wonder.

MEAN 18

Accolade Software
20833 Stevens Creek Blvd.
Cupertino, CA 95014
(408) 446-5757
$44.95

CIRCLE **254** ON READER SERVICE CARD

Reviewed by DeWitt Robbeloth



Armchair golfers will enjoy playing **Mean 18** if they can ever get beyond the practice tee. The instructions confused me so much I almost gave it up. But once on the course, I found challenging amusement where physical coordination, concentration, judgment and an attractive environment all translated nicely from real golf to the computer.

Three careful clicks of the mouse button simulate a golf swing. The timing of the clicks, cued by a visible "power gauge," determines the extent of your backswing and the moment of impact with the ball. Perfect timing results in a shot down the middle with maximum distance for the chosen club. Slight timing variations cause hooks and slices and loss of distance, so you can rarely play a shot the same way twice. Even short putts are tricky, requiring rapid clicking to avoid overpowering the ball.

You also control your shots in two other realistic ways—choice of 14 clubs and direction of shot. Scrolling lets you shoot to the side, for example, to escape a tree, or to play a deliberate hook.

Mean 18's four courses are Augusta, Pebble Beach, St. Andrews, and Bush Hill Country Club. Each realistic hole begins with a tee facing down the fairway. Trees, bunkers, streams and rough are all strategically placed to intercept the errant shot. In the distance you see the green and flag, if they're not hidden by the terrain.

Your onscreen golfer, togged in color-coded shirt, addresses the ball. As you click your mouse, the golfer swings and sends a white dot arcing towards the pin. The ball drops, bounces and comes to a stop according to the computer formula. When you click again, the scene changes to represent the vista from the ball's new position.

When your ball finally lands on the green, you first see an overhead view of the whole green and its contours, the hole and the positions of all balls on the green. Then the scene narrows to the distance between your ball and the hole. The computer displays an aiming line for your putt, which you adjust with the mouse. When the line seems right, the clicker putts the ball.

On my first round I shot an 85 against a par of 72. Not bad. If you need more challenge, choose the pro tees to increase the distance, or play in expert mode where the computer does not suggest the proper club nor line up the shot. Stroke play (lowest total) or medal play (most holes won) are available.

Of course the computer keeps score, and tells whose shot it is (which can get confusing when you're pretending to be a foursome all by yourself). You see the scorecard after each hole, and you can post outstanding scores to the Hall of Fame. If your game is interrupted, save it to disk and return to it later.

The graphics of Mean 18 deserve praise. With great simplicity, computer-artist George Karalias paints a pleasant and convincing golf setting. If you ever tire of the initial four courses, design your own with the Course Architect—essentially a golf-course construction set included on the disk.

My beef with this game is the instructions. Originally written for the

continued on page 73

STARGLIDER

A fantastic space warfare simulator for your ST

Reviewed by DAVID PLOTKIN

Starglider is an extraordinary combat simulator. Its combination of strategy and outstanding graphics demands hair-trigger reflexes, providing a thoroughly enjoyable gaming experience.

Starglider is the classic "one vessel against overwhelming odds" scenario. When your home planet of Novenia was overrun by the Egrons, only the outpost on Novenia's moon was left intact. There, you discover a museum piece—an AGAV, or Airborne Ground Attack Vehicle. After fitting it with advanced weaponry and rocket boosters, you fly it from the moon to Novenia, there to do battle with the hordes of enemy invaders. At stake is not only the fate of Novenia, but of your friends left behind at the moon base, who will perish unless additional supplies reach them soon from Novenia.

When you reach Novenia, the hordes of enemies will give you pause. There are numerous types: The (apparently) invincible walker (shades of "Empire Strikes Back") is the most imposing, but there are also fighter aircraft, tanks, missile launchers, floating mines and other nasties, all rendered in gorgeous color. Most of these will fire furiously at you, and it will take all your skill to avoid them and return fire. You will also have to deal with the flagship of the enemy fleet, StarGlider 1.

Your AGAV is equipped with twin lasers and computer-aided targeting, as well as guided missiles—if you can find any. There is nothing so satisfying as blowing an enemy tank to bits with multiple hits from your laser! Your AGAV also has a force field which will give limited protection from enemy fire. From the moment you descend to Novenia, you will have your hands full. Besides flying your ship, monitoring foward speed



and altitude (hitting the ground is very hard on your shields), you must keep an eye on your laser energy, shield energy, and flight energy. As you duke it out with enemy forces, you will also have to figure out how to recharge your various energy sources. Not all of them can be recharged in the same place. It's actually not too hard to figure where and how to get energy —read the documentation carefully.

Your AGAV is controlled by the mouse. The control systems uses both mouse buttons for altitude, speed, and fire control. It is a little confusing at first, but you soon get the hang of it. Once you do, Starglider becomes a lot of fun. You can also control the AGAV from the keyboard, although I think the mouse is much easier. The default keys are strange choices, but you have the option of defining your own control keys before starting the games. Thus, you can control your AGAV using the cursor arrow keys if you wish.

Your view is out the cockpit, and the graphics and animation are simply amazing. You appear to be moving over the surface of a darkened planet, with structures and enemies depicted in vector graphics. The documentation, consisting of a novella, flight manual and quick reference sheet, gives quite plausible reasons why the planet is dark and why you can see through buildings and vehicles. Moving your mouse left and right alters your flight direction, allowing you to line up your sights on targets and blast away with your lasers. Enemies explode convincingly, scattering pieces. Digitized sound and voice complete the realistic simulation of combat.

The strategy required for Starglider is pretty intuitive. For example, if you are "waxing" an enemy fighter's tail, blasting away (it may take quite a few hits before it explodes), you may need to adjust your speed so as not to let him get away or get too close. A burst

continued on next page

of speed may also be needed to shake a missile from your tail, and it is often wiser to run than take on a missile launcher that never seems to run out of missiles!

The ultimate aim of Starglider is the destruction of the enemy flagship. After destroying a variety of enemy forces, Starglider 1 will make an appearance. No sense in wasting laser fire: The flagship is impervious. The only weapon that has any effect on Starglider 1 is a missile. These can be obtained at the supply silos, but only one at a time. When you launch a missile, your cockpit screen switches to show the view from the missile, and you use your mouse to guide it towards the madly evading flagship. Only one place on Starglider is vulnerable, and it is difficult to hit. Successfully hitting that spot (under the tail) advances you to the next level. Three hits will destroy the flagship, causing Egron forces to surrender.

As you would expect, each successive level is harder. But not just because things occur faster, as would be true of an ordinary arcade game. What happens is that the enemy gets smarter and adjusts his strategy to make your life miserable. Heavy concentrations of tanks begin appearing around the supply silos and energy recharge towers, and it gets ever more hazardous to refuel. Further, there seems to be no end to the missiles the Egrons throw at you, and the missiles can track you more accurately at the higher levels.

The documentation which comes with Starglider is delightful. Not only is the novella informative, but funny as well, with historic references (if you are a history buff) to the likes of Hermann Goering (in charge of the Luftwaffe —airforce— of Nazi Germany during World War II). In fact, the commander of the Egron forces is a character named Hermann Kruud, who swaggers and has delusions of grandeur very much like Goering. The novella is also full of references to the designers and programmers of Starglider, with backwards names abounding.

The bright colors, smooth animation and digitized sound of Starglider make for an impressive gaming experience, full of challenges and fun. I would have prefered slightly less overwhelming odds to fight against, and the inability to save high scores to disk (they are lost when you turn off the computer) is sorely missed, but I think that this game is destined to become a classic. It really shows off what the ST can do. If you are hungering for a high-resolution challenge, this game is for you.

Now excuse me, I have a date with some Egrons. . .

Starglider
Rainbird/Firebird Licensees
74 North Central Avenue
Ramsey, NJ 07446
(201) 934-7373
$39.95

CIRCLE **240** ON READER SERVICE CARD

ST PRODUCT REVIEWS
continued from page 70

IBM, the slim instruction pamphlet failed completely to orient me to the ST version. A 3×5-inch insert attempts to explain changes for the ST, but essentially it only says to substitute "mouse click" for "space bar." There's no explanation of the practice tee or practice green, where every novice player naturally proceeds—and where almost nothing works as the instructions say they do, although the instructions are correct for the main course. It's a shame that such a colorful and interesting game is almost torpedoed by shortsighted documentation.

MIDI MAGIC

Micro-W Distributing Inc.
1342B Route 23
Butler, NJ 07405
(201) 838-9027
$49.95

CIRCLE 279 ON READER SERVICE CARD

Reviewed by Jim Pierson-Perry

As I write this review, the ghost of George Gershwin is rolling into high gear playing "Rhapsody In Blue" on my Casio synthesizer. And when he finishes, some of his friends will take over to play "The Old Piano Roll Blues," "Do You Think I'm Sexy?" and others.

MIDI Magic allows the ST to read music disks and send the data, via the ST MIDI ports, to any MIDI-compatible instrument. It comes with a connecting cable for the ST to the instrument, a demo disk with six songs and a catalogue of available music disks (currently 103 at $19.95 apiece). As the music plays, the screen shows a player piano with the corresponding piano roll winding through it.

The programmer of the ST version of MIDI Magic is Tom Jefferies, who also gave us the MIDI sequencer in the premiere issue of START magazine. Both programs use a basic MIDI protocol with all notes sent on one channel in polyphonic mode. For best results, the receiving instrument should be capable of sounding at least eight notes at once (e.g. Casio CZ-101, Yamaha DX-7) or there might be a noticable loss of music quality.

A standard approach would be to use a synthesizer set to sound like a piano as the receiving instrument to give the full effect of a simulated player piano. While this works well, I've had fun with more unusual synthesizer sounds, such as Madonna's "Material Girl" played by eight invisible whistlers, or the Beach Boys' "California Girls" on bagpipes. Of course with MIDI just about anything goes, so if you want to send the music data to a sampling keyboard set to respond as harmonic barking dogs—go for it.

Be aware that MIDI Magic is a "playback only" program—you can't use it to record your own playing. It does what it claims—acts as a computer-age player piano—and does it well. I recommend this as a good example of what the marriage of the Atari ST and MIDI can do—not to mention the great fun. Now if you will excuse me, George is done and I think I'll let Eubie Blake try playing some ragtime on a trumpet section.



LYCO COMPUTER

Marketing & Consultants

ATARI SOFTWARE

ACCESS
Software Incorporated

Everything you could want in a golf game. Picturesque landscape, full assortment of clubs, four 18-hole courses, realistic actions and room for a foursome.

Only:
ONLY: $24.75

ACTIVISION

Mindshadow	$15.75
Hacker	15.75
Ghostbusters	15.75
Great AM Race	15.75
Music Studio	22.75

subLOGIC

Pinball	$22.75
Flight Sim II	29.95
Scenery Dsk	17.95
Jet	34.75

MicroProse

Silent Service	$21.95
F-15	21.95
Conflict in NAM	24.75
Kennedy Approach	16.95
Top Gunner (3 games)	18.95

Brøderbund Software

Loderunner	$26.75
Champ Loderunner	24.95
Bank St. Writer	39.95
Printshop	26.75
Graphics Lib. EA	16.75
P.S. Companion	CALL
Karateka	17.75

ACCESS

Triple Pak	$17.95
Leader Board	24.75
Tournament Dsk 1	15.75

INFOCOM

Leather Goddess	$20.75
Moonmist	20.75
Trinity	20.75
Hitchhiker's Guide	20.75

FIREBIRD

Pawn	$28.75
MRCA	18.95

OSS

Basic XE	$44.95
Basic XL	32.95
Action	44.95
Mac 65	44.95
Tool Kits (for above)	16.95

EPYX

Champ Karate	$20.75
Apshai Trilogy	24.75

OVER 3000 SOFTWARE TITLES IN STOCK

ATARI ST SOFTWARE

ACTIVISION

Basketball	$28.75
Music Studio	32.75
Hacker	26.75
Little People	29.75
Paint Works	40.75
Hacker II	29.75

subLOGIC

Put yourself in the pilot's seat of a piper 181 Cherokee Archer and head for the skies! High speed color 3-D graphics provide a spectacular view.

ONLY: $29.95

MicroProse

Silent Service	$22.75
F-15	22.75

UNISON WORLD

Printmaster	$24.75
Art Gallery I	20.75
Art Gallery II	20.75

EPYX

Super Cycle	$24.75
Winter Games	24.75
World Games	24.75
Wrestling	24.75

subLOGIC

Flight Sim II	$29.95

SSI

Phantasie	$24.75
Phantasie II	24.75

FIREBIRD

Pawn	$28.75
Starglider	28.75

ACCESS

Leader Board	$24.75
Tournament Disk 1	15.75

ISD

VIP Professional	$139.95
VIP Professional Lite	69.95
ST Accounts	139.95

JOYSTICKS

Bat Handle	16.75
Boss	11.99
Super 3-way	19.99

ATARI SYSTEM SPECIAL!



- ★ Atari 130 XE Computer
- ★ 1050 Drive
- ★ Star NX-10 Printer

REG. $697 **NOW $459**

Full Manufacturer's Warranty

Risk Free Policy

In-stock items shipped within 24 hrs of order. No deposit on C.O.D. orders. Free shipping on prepaid cash orders within the continental U.S. Volume discounts available. PA residents add sales tax. APO, FPO and international orders add $5.00 plus 3% for priority mail. Advertised prices show 4% discount for cash, add 4% for Master Card and VISA. Personal checks require 4 weeks clearance before shipping. We cannot guarantee compatibility. We only ship factory fresh merchandise. Ask about UPS Blue and red label shipping. All merchandise carried under manufacturer's warranty. Return restriction applicable. Return authorization required. All items subject to change without notice



- ☆ Access to nation's largest inventory.
- ☆ All merchandise factory fresh.
- ☆ Free shipping on prepaid cash orders.
- ☆ Compare our prices.
- ☆ Easy toll free access.
- ☆ Air freight service available.
- ☆ Full accessory line.
- ☆ 24 hr. shipping on in-stock items.
- ☆ Offer C.O.D. with no deposit.
- ☆ Widest selection of name brand products.
- ☆ Full mfg. warranty applies.
- ☆ Courteous and experienced staff.
- ☆ Trained customer service dept.
- ☆ PO's accepted from educational institutions.



TOLL FREE 1-800-233-8760

Customer Service 1-717-494-1670





CIRCLE 030 ON READER SERVICE CARD



LYCO COMPUTER
Marketing & Consultants

LYCO'S PRINTERS OF THE MONTH!

star micronics

1 - Year Waranty

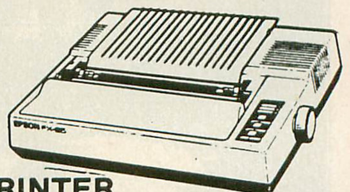
NX-10
DOT MATRIX PRINTER
120cps DRAFT - 30 cps NLQ
EXCELLENT FOR IBM AND EPSON



$209

EPSON®

1 - Year Warranty
LX-86



DOT MATRIX PRINTER
120 cps DRAFT - 16 cps NLQ

SAVE ON THESE IN STOCK PRINTERS

STAR MICRONICS

NX 10C	215
NL-10	229
NX-10	209
NB-15	CALL
SD-15	438
SR-10	469
NX-15	339

PANASONIC

1080i	199
1091i	269
1092i	(NEW)
1592	419
1595	549
3131	375
3151	SAVE
1080 AP	239

JUKI

Juki 6100	399
Juki 5510	435
Juki 6300	739
RS-232 serial board	55

SILVER REED

EXP 420 P	209
EXP 600 P	489
EXP 800 P	649
EXP 770	740

EPSON

LX 86	225
FX 85	355
EX 800	479
EX 1000	669
FX 286	479
LQ 800	529
LQ 1000	729

SEIKOSHA

SP-1000 VC (C-64)	165
SP-1000 A centronics	185
SP-1000 IBM	185
SP-1000 AS RS-232	185
SP-1000 AP APIIc	185
BP-1300 AI	419
BP-5420	1075
BP-5300 AI	CALL
Color Kit	119
BP-5420 ribbon	12.50
SP-1000 ribbon	8.50

CITIZEN

120-D	179
MSP-10	285
MSP-15	385
MSP-20	325
MSP-25	485
Premier 35	469

OKIDATA

Okimate 20 ST	189
120 NLQ	225
182	214
192+	365
193+	559
292	449
293	599

LEGEND

808	159
1080	199
1380	229
1385	289

TOSHIBA

321 P/S	479
351 sheet feeder	529
P 341 P	669
P 341 S	699
P 351 +	999

DIABLO

D25	549
P-32 CQ1	699
635	1029
D-80 1F	2395

ATARI HARDWARE

INTERFACING

Microprint	39.95
XETEC AT	39.95
Atari 850	109
PR: Connection	59.95

MODEMS

ATARI XM 301	39.95
Supra 300	39.95
Supra 1200	149.95
U.S. Robotics 1200	189
Avatex 1200	89

DRIVES

Indus GT Atari	179
Atari 1050	129
SF 314	219
SF 354	159

MONITORS

CALL FOR AVAILABLE MODELS FOR YOUR SYSTEM!

5¼ DISKETTES

MAXELL	
SSDD	9.99
DSDD	12.99
BONUS	
SSDD	6.99
DSDD	7.50
SKC	
SSDD	8.50
DSDD	9.50

3.5 DISKETTES

3M	
SSDD	16.99
DSDD	23.99
MAXELL	
SSDD	15.99
DSDD	21.99
SKC	
SSDD	14.99
DSDD	19.99

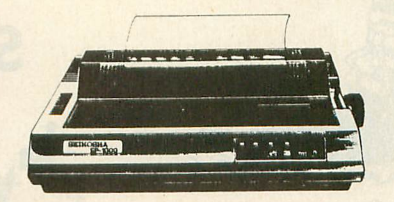
SPECIAL PACKAGE PRICE!

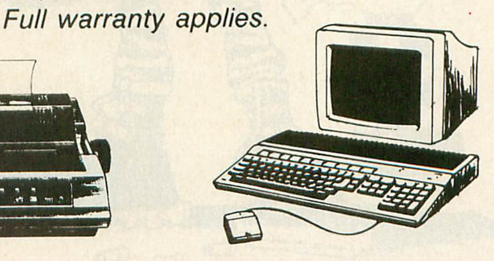


ATARI 1040 MONO SYSTEM!
with
Seikosha SP-1000 A printer



$969.00
Full warranty applies.





TOLL FREE 1-800-233-8760
in PA 1-717-494-1030

OR SEND TO
LYCO COMPUTER
P.O. Box 5088
Jersey Shore, PA 17740

HOURS
Mon-Thur 9AM-8PM
Fri 9AM-6PM
Sat 10AM-6PM

CIRCLE 030 ON READER SERVICE CARD

HIPPO SOUND DIGITIZER

An easy-to-use sound digitizer for your ST

Reviewed by Patrick Bass

I want this product.

I can't use this product.

No, the above is not a textbook example of dichotomy, it's how I feel about the **Hippo Sound Digitizer**. First, however, let's explore it and then get back to my petty wants and desires.

The Hippo Sound Digitizer (hereinafter known as HSD) is a eight-bit resolution hardware/software combination which allows you to digitize sound with your Atari ST computer. The HSD hardware consists of a dove-grey box about half the size of an ST disk drive, which plugs into the cartridge slot of the computer. The box has two external control knobs for adjusting input and output level. On the back you'll find 1/4 inch standard phone jacks for sound input and output.

Notice that word output. You'll need an external amplifier to hear the sounds you've digitized, since there seems to be no way to play the sounds back through the TV speaker. I spent about 15 frustrating minutes before I found a reference to "adjusting the level of your amplifier" buried in the HSD manual. They should have made this apparent in the "Setting Up The Unit" section. Incidentally, patch cords are not provided.

The HSD software comes on a 3.5 inch disk, and contains both the digitizer software and sample sounds. HSD works on either color or monochrome Atari ST systems. To actually operate the digitizer, from the desktop, double-click on SOUND.PRG, and in a few seconds you'll see the HSD title screen pop up. There are four choices presented along the bottom of the screen.

On the left is "Command", which will present the main control panel for interacting with HSD. Next comes "O-scope", which presents a digital oscilloscope onscreen so you may watch the waveform of the incoming sound. To the right of that is "Rack," which presents a screen from which you may add reverb or echo to incoming or existing sounds, and finally, on the right is "Exit", which drops you back to the GEM desktop.

COMMAND

The command screen is where you'll spend most of your time. Let's examine it closely. Most of the upper half of the screen contains an editing window, where the sound waveform is displayed and edited from. The upper right of the screen contains a "gas gauge" display of memory used for the sound and memory left in the cut/paste buffer. The lower half of the screen contains buttons for 24 different functions.

First, you may LOAD or SAVE a sound file. The STATS button updates the display concerning playing time, number of samples, sample rate, and percentage of modulation concerning the average amplitude of the signal. The MIDI button sends sampling out through the MIDI port in the back. You may ADJUST RATE, either for the entire sound or just for a selected section of the sound, and vary the VOLUME, again either for the entire sound or just for a selected section.

HSD allows you to define your own wave shape and ADSR envelope, for completely unique sounds created from your own imagination. Also, at any time during editing of a sound, you may UNDO your last action.

You may MIX, or overlay, (sound with sound) one voice or instrument on top of another one. For example, select one sentence of a person talking, cut out a copy and save it in the cut buffer. Then, MIX the sound in the buffer back in with the original sound many times, each one starting a fraction of a second sooner or later than the last. The result? A "crowd" of people saying the original sentence

continued on next page

(more or less) in unison.

You may select a section of sound and SQUEEZE it to raise the pitch up one note, or you may STRETCH it out to lower the pitch. For multiple SQUEEZES and STRETCHES, you may double-click on the buttons, then type the number of times to repeat into the resolution dialog box.

Ever play Beatles' records backwards? With the REVERSE button, you could record and select the voice saying "Number Nine... Number Nine..." from the White Album and play it in reverse, confirming for yourself what the Beatles were really saying. (I have, and no, I'm not saying.)

The next four buttons all work together. CUT will remove the selected section of sound and place it into the cut buffer. COPY just makes a copy of the sound and places it into the cut buffer, without removing it from your original sound. INSERT copies the sound in the cut buffer to wherever the cursor is in the current sound being edited. REPLACE will remove the selected section of sound on the edit screen and replace it with the sound stored in the cut buffer.

When you click on SHOW ALL, the entire sound is displayed in the edit window along the top. The left side of the edit display shows the time the selected sound starts, and the right side of the display shows what time the sound ends. SHOW ALL is needed, because using the ZOOM IN and ZOOM OUT buttons, you may zoom in on a selected section of sound until the individual peaks and valleys of the sound waveform itself are visible.

This can have a very important function. For example, record a selection of music off an old record. Now play the section of music back, and if the record was old enough, you'll hear clicks and pops in the sound where the record has deteriorated. On the edit screen, you can see the clicks and pops, as they are louder than the music around them. Now ZOOM IN on a single click or pop, and cut it out of the music. The two ends of the song will seal together automatically, leaving just music, no clicks or pops.

Finally, you may PLAY the entire recorded sound, or just a selected piece of it. To select a section of sound, point the cursor at the left edge of the sound you wish to select, then click-drag the mouse to the right. The selected section of sound will be highlighted.



The complete Hippo Sound Digitizer kit.

Above the PLAY button is DIGITIZE, which starts the HSD sampling the input sound and stores it in memory. Last is the SET TIME button, which allows you to determine how long the digitization lasts.

O-SCOPE

Click on O-SCOPE, and the screen becomes a digital oscilloscope displaying the incoming sound as a waveform on your TV screen. This screen is used for setting the level of the incoming sound for use with the digitizer.

RACK

RACK is a screen containing controls for inserting echo or reverb information into a previously digitized and stored sound, or for adding reverb or echo to the sound currently being digitized.

STORAGE CAPACITY

Just how much sound can be stored at one time? Basically, it depends on how fast you sample the sound when you digitize it. There are rules in digital sound recording which state that in order to *properly* digitize the incoming sound, you must take *twice* as many samples (per second) as the highest expected incoming frequency. The HSD will sample sound up to 200 kilohertz (Khz) and signals up to five volts.

This, for example, means that to record a high-fidelity sound whose highest note is around 20 Khz, we must take 40 thousand samples per second. For voice, where the highest note is more like 5 Khz, a sampling rate of 10 Khz should work fine.

Each "sample" of sound is stored in one byte of memory. This means 20 thousand samples would take up 20 thousand bytes of memory. In an Atari ST with one megabyte of memory, there are roughly 800,000 bytes free for sound storage.

So, with a little math we can see that high-fidelity music sampled at 40

Khz should give us (800,000 / 40,000) 20 seconds of recording capability. A slower sampling rate, for instance, gives a correspondingly longer recording time. For example, voice sampled at 10 Khz should result in (800,000 / 10,000) 80 seconds, or nearly a full minute and a half, of digitized, editable sound.

Now this may be a case of not seeing the Emperor's new clothes, but I can tell very little difference (if at all) between music sampled at 40 Khz and music sampled at 20 Khz. If you can't tell the difference either, then you've just found a way to double your recording time.

NITPICKING

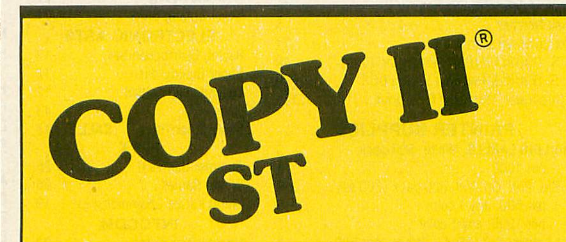
Overall, the product is solid and usable. . . to an extent. For me, I was disappointed to find there was no *apparent* easy way to include my digitized sounds into my own programs. Like in Jez Sans' StarGlider, I'd like my panel to say "Systems alert!" instead of beeping at me. (With that English accent, of course. Who is she?) On the other hand, Hippo does reveal the file structure of the sound files created and they do include programming examples of how to capture digitized sound and how to drive the digitizer with your own sound data.

But . . . If I were running a radio or TV station, or worked in a recording studio, this one package would allow me to compose and edit complete commercials without ever putting sound on tape. I could cut, paste, and distort any sound I could hear, and even some I couldn't. I would want this package greatly, even to the point of buying an ST just to drive it.

Think of this . . . a complete package of HSD and the Atari 1040ST costs less than one-tenth the cost of a studio digital tape recorder. And the digital tape recorder won't play Time Bandits or Flight Simulator II . . .

HIPPO SOUND DIGITIZER
$139.95
Hippopotamus Software
985 University Avenue Suite 12
Los Gatos, California
(408) 395-3190

CIRCLE 284 ON READER SERVICE CARD





MICROTYME



A DIVISION OF MICRO PERIPHERALS, INC.
P.O. BOX 369 • KETTERING, OHIO 45409

MasterCard

HARDWARE/ACCESSORIES

ATARI

ST's Color or Mono . . . CALL
ST Monitor Cables . . . CALL
SF 314 Double Sided Drive . . . CALL
Supra 20, 30, 60 Meg Hard Disks . . . CALL
SH 204 20 Megabyte Hard Disk . . . CALL
SC 1224 RGB Color Monitor . . . CALL
130 XE . . . CALL
65 XE . . . CALL
1050 Disk Drive . . . CALL
1020 Color Printer/Plotter . . . 27
Astra "The One" . . . 284
7800 Pro System & Software . . . CALL
Power Supply 400/800/810 1050/850 . . . 15
Power Supply 600/800 XL, 130 XE . . . 26
Power Supply for Indus GT . . . 15

PANASONIC

KX-P1080i, 120 cps, 5NLQ modes . . . CALL
KX-P1091i, 160 cps, new model . . . CALL
KX-P1092 80 col, True 180 cps . . . 339
KX-P1592 136 col, True 180 cps . . . 549
KX-P3131 L.Q. Daisy, 80 col . . . 279
KX-P3151 L.Q. Daisy, 136 col . . . 429
KX-P110 Ribbon, Blk . . . 9
COLOR RIBBONS . . . 11

CITIZEN

MSP-10 . . . CALL
MSP-15 . . . CALL

STAR MICRONICS

NX-10 (80 col) . . . CALL
NP-10 . . . NEW MODEL . . . 179
NL-10 . . . CALL
NX-15 (135 col) . . . 429
STAR SG-10 Ribbons . . . 4
Ribbons NL or NX . . . CALL

MODEMS

ATARI 1030 . . . 45
XM-301 Direct Connect . . . CALL
HAYES 1200 Smartmodem . . . 399
US ROBOTICS COURIER 2400-100% Hayes! 429
HABA 1200 (Hayes Compatible) . . . 119
VOLKSMODEM VM 520 (Hayes Compat) . . . 149
AVATEX 1200 bps . . . **Special** . . . 99
AVATEX 1200 H.C. (Hayes Compatible) . . . 149

INTERFACES/BUFFERS

ATARI 850 . . . In Stock! . . . 119
P:R: CONNECTION (100% 850 compatible) . . 69
CABLES - We've Got 'Em . . . CALL
XETEC GRAPHIX AT . . . 39
SUPRA/MPP MICROPRINT . . . 39
SPECIAL SUPRA MICROSTUFFER (64K) . . . 59
SUPRA/MPP 1150 . . . CALL

MIDI HEADQUARTERS

CZ's . . . CALL
Cables . . . CALL
Hygrid Arts Software . . . CALL
Other MIDI Software . . . CALL

MONITORS

TEKNIKA MJ-22 RGB and Composite . . . 279
THOMSON Green W/Audio . . . 85
THOMSON Amber W/Audio . . . 90
THOMSON Composite Color . . . CALL
THOMSON, RGB and Composite . . . CALL
SAKATA SC100 . . . 159

EPSON

LX-86 (80 col) . . . CALL
FX-85 (80 col) . . . CALL
FX-286 200 cps (135 col) . . . CALL
Tractors . . . CALL

ACCESSORIES

ST - COVERS, Heavy Grade Vinyl . . . 8
ST - MOUSE MAT . . . 10
ST - 6' Printer Cable . . . 19
ST - Modem Cable (to Hayes, etc.) . . . 17
ST - Monitor Stand, Swivel & Tilt . . . 15
ST Clock Internal or Plug-In . . . ea 41
Disk File for 3.5" disks (holds 40) . . . 9
Flip N File DATA CASE (holds 50) 5¼ . . . 8
Disk File, with Lock (holds 100!) 5¼ . . . 13
Power Strip, 6 outlet, (15 amp Surge) . . . 15
Deluxe Power Strip w/Spike & Surge . . . 24
Printer Stand, Heavy Duty, Sloping . . . 13
ATARI "Standard" Joystick . . . 7
Epyx 500XJ Joystick . . . 15
WICO Bat Handle Stick . . . 17
Competition Pro 5000X Stick . . . 18
6' Atari Serial I/O Cable . . . 7
Book of Adventure Games I or II . . . 15
Disk Notcher . . . 5
Compuserve Starter Kit . . . 24
U.S. DOUBLER (Dbl. Density for 1050) . . . 49
U.S. DOUBLER without Sparta DOS . . . 29
"Duplicator" for 1050 Disk Drive . . . 125

PRINTER SUPPLIES

MAILING LABELS, White, 500 pack . . . 3
per 1000 . . . 4
Blu, Pnk, Gn, Yel, 800 pack (200 ea) . . . 9
per 500, any 1 color . . . 5
per 1000, any 1 color . . . 7
Big Labels, 1-7/16x4", White, per 500 . . . 5
PRINTER PAPER, Micro-Fine perfs, 20 lb.
500 sheets, Pure White Bond . . . 8
1000 sheets, same as above . . . 14
PRINTSHOP "Rainbow" Color Paper Packs
Pastels (5 colors), 50 sheets of ea . . . 12
Matching Envelopes, 20 of each . . . 6
Brights (8 colors), 50 sheets of ea . . . 29
Matching Envelopes, 20 of each . . . 10
ALL 13 colors, 50 sheets of each . . . 39
Matching Envelopes, 20 of each . . . 14

SOFTWARE

We can't list it all. . .call if you don't see it!

8-BIT SOFTWARE

ATARI
Atariwriter Plus . . . 35
Proofreader . . . 12
Silent Butler . . . 18
Learning Phone . . . 16
Star Raiders II . . . 13
OTHERS . . . CALL

ACCESS
Triple Pack . . . 14
Leader Board . . . 26
Tournament Disks . . . 14

ACCOLADE
Hardball . . . 20
Fight Night . . . 20

BATTERIES INCLUDED
Paperclip w/Spellpak . . . 39
Homepak . . . 33
B-GRAPH . . . 27

ACTIVISION
Music Studio . . . 23
Mind Shadow . . . 17

ARTWORKX
Strip Poker . . . 19
S.P. Data Disks each . . . 13

BRODERBUND
Championship Loderunner . . . 18
Karateka . . . 18
Loderunner . . . 23
Print Shop . . . 28
Print Shop Companion . . . 24
Graphics Library 1,2, or 3 . . ea 16

DATASOFT
Alternate Reality . . . 27
Never Ending Story . . . 21

ELECTRONIC ARTS
Racing Destruction Set . . . 12
Super Boulderdash . . . 12
Touchdown Football . . . 12
Ultima IV . . . 43
Many Other Titles . . . **CALL** . . . 12

EPYX
Summer Games II . . . 26
Winter Games . . . 26
World Karate Championship . . . 19

INFOCOM
Hitchhiker's Guide . . . 23
Spell Breaker . . . 29
All Others . . . CALL

O.S.S.
Action . . . 46
Basic XL . . . 36
MAC/65 . . . 46
Tool Kits for above . . . ea 19
Basic XE . . . 46

SSI
Mech Brigade . . . 38
War Game Const. Set . . . 19
NAM . . . 26
USAAF . . . 38
OTHERS . . . CALL

SUBLOGIC
Flight Simulator II . . . 37
Scenery Disks 1-6 . . . ea 15
All 6 Scenery Disks . . . 74

SYNAPSE
SYN CALC . . . 31
SYN CALC TEMPLATES . . . 13
SYN FILE + . . . 31

XLENT
Typesetter . . . 22
Rubber Stamp . . . 20
Page Designer . . . 20
Megafont II . . . 16
P.S. Interface . . . 19
Word Processor . . . 20

ST SOFTWARE

ATARI
1st Word . . . 32
DB Master One . . . 33
Joust . . . 19
Star Raiders . . . 19

ABACUS
Text Pro . . . 33
Paint Pro . . . 33
Datatrieve . . . 33
Power Plan . . . 52
PC Board Designer . . . CALL

ACCESS
Leader Board . . . 26
Tournament Disks . . . ea 14

ACCOLADE
Mean 18 . . . 33
Hardball . . . CALL

ACTIVISION
Hacker . . . 29
Hacker II . . . 33
Little Computer People . . . 31
Paintworks . . . 46

ANTIC
A-CALC . . . 45
CAD-3D . . . 36
Flash . . . 29
Expert Opinion . . . 72

ARTWORX
Strip Poker . . . 26
Bridge 4.0 . . . 20
Peggammon . . . 12

BATTERIES INCLUDED
B-Graph Elite . . . CALL
D.E.G.A.S. Elite . . . 49
IS Talk . . . 51
Paperclip Elite . . . CALL
Thunder . . . 26
Time Link . . . 32

ELECTRONIC ARTS
Chessmaster 2000 . . . 31
Sky Fox . . . 29
Ultima III . . . 39
Ultima IV . . . CALL

EPYX
Summer Games . . . 26
Winter Games . . . 26
Super Cycle . . . 26
Championship Wrestling . . . 26
World Games . . . 26
Rogue . . . 26
Temple of Apshai . . . 26

INFOCOM
All Titles . . . CALL

MICHTRON
Business Tools . . . 26
Cornerman . . . 32
DOS Shell . . . 32
M-Disk . . . 26
Mighty Mail . . . 32
Soft Spool . . . 26
Personal Money Manager . . . 32
Utilities . . . 39
Time Bandits . . . 26
Major Motion . . . 26

FIREBIRD
Starglider . . . 29
The Pawn . . . 29

REGENT
Regent Base . . . 67
Regent Word II . . . 67

SIERRA-ON-LINE
ST ONE WRITE . . . 39
Donald Duck's Playground . . . 19
Ultima II . . . 39
Kings Quest I, II or III . . . ea 33
Space Quest . . . 33

TIMEWORKS
Data Manager ST . . . 52
Swift Calc ST . . . 52
Word Writer ST . . . 52

UNICORN
Math Wizard . . . 26
Fraction Action . . . 26
Decimal Dungeon . . . 26
Read & Rhyme . . . 26

UNISON WORLD
Print Master . . . 26
Art Gallery I, II or III . . . ea 19

ST LANGUAGES
MODULA 2 . . . 54
• Developer's Kit . . . 99
MARK WILLIAMS C . . . 119
LATTICE C . . . 109
GST-ASM . . . 45
ASSEM PRO . . . 39

DISKETTES

Prices Are Per Box/Pack of 10

5¼"	GENERIC		SONY	MAXELL	BONUS		WABASH
	SS/DD	DS/DD	SS/DD	DS/DD	SS/DD	DS/DD	SS/DD
2-5	6.95	7.95	9.50	11.95	8.95	10.95	8.50
6-10	5.95	6.95	8.50	10.95	7.95	9.95	7.50

Prices Are Per Box/Pack of 10

3½	SONY		MAXELL	VERBATIM
	SS/DD	DS/DD	SS/DD	SS/DD
2-5	15.00	24.00	15.00	15.00
6-10	14.00	22.00	14.00	14.00

Rainbow Colored Centech Disks (2 ea. of 10 colors per pkg) . . . **17**

"Silver" Centech Disks (20 Pack) . . . **17**

TO ORDER, CALL TOLL FREE 1-800-255-5835

M-F 9am - 9pm • EST • SAT 10am - 4pm
Ohio Residents, Order Status or Tech, Info Call (513) 294-6236

TERMS AND CONDITIONS

• NO EXTRA CHARGES FOR CREDIT CARDS! • We do not bill until we ship • Minimum order $20 • C.O.D. to continental U.S. only, add $3 • Ohio residents add 6% sales tax • Please allow 3 weeks for personal or company checks to clear • Shipping/Handling: (Call for Quote). Hardware, minimum $4; Software and most accessories, minimum $3 • Overnight shipment available at extra charge • We ship to Alaska, Hawaii, Puerto Rico (UPS Blue Label Only), APO, and FPO • Canadian orders, actual shipping plus 5%, minimum $5 • All defective products require a return authorization number to be accepted for repair or replacement • No free trials or credit • Returns subject to 15% re-stocking charge • Due to changing market conditions, call toll free for latest price and availability of product. FOR YOUR PROTECTION, WE CHECK ALL CREDIT CARD ORDERS FOR FRAUD.

ST New Products

By GREGG PEARLMAN, ANTIC JUNIOR EDITOR

ANIMATOR ST

Animator ST from Aegis uses a concept called "tweening" to control the movement of objects during an animation, breaking it up into manageable units. You can create objects within the program and, for instance, change a pyramid into a star by dragging the points of the pyramid to the proper positions. When that tween is replayed, Animator ST creates all the in-between positions of the shape. The program also features color-cycling, in which repetitive movements can be animated, and cels created in NEOchrome can be page-flipped.

$79.95. Aegis Development, 2210 Wilshire Blvd., Suite 277, Santa Monica, CA 90403. (213) 392-6445. PRESS.
CIRCLE 294 ON READER SERVICE CARD

THUNDER! FOR HEARING-IMPAIRED

Batteries Included's **Thunder!** now lets people with impaired hearing use the program's real-time spelling checker. Instead of beeping, the new version of Thunder! alerts you by blinking the screen. Now you can see when a spelling error has been detected. This special version is available free with the return of the original disk.

Batteries Included, 30 Mural Street, Richmond Hill, Ontario L4B 1B5, Canada. (416) 881-9941. PRESS.
CIRCLE 288 ON READER SERVICE CARD

NEC CP6 AND CP7

The 24-pin NEC **CP6** (80 columns, $860) and **CP7** (136 columns, $1,160) Color Pinwriters give you eight colors and 360×360 dots-per-inch resolution for graphics, and high speed (180 cps in draft mode) and letter quality for text. These quiet printers are compatible with the Epson LQ Series and JX80. COMDEX saw the announcement of option kits including buffer expansion and extra font capability for the CP6 and CP7. NEC's new P9XL ($1795) prints text at 400 cps in draft mode.

NEC Information Systems Inc., 1414 Massachusetts Avenue, Boxborough, MA 01719. (617) 264-8000. PRESS.
CIRCLE 237 ON READER SERVICE CARD

DR. T'S MUSIC SOFTWARE

The **Keyboard Controlled Sequencer** (KCS, $195) operates in track mode, a 48-track computerized tape recorder; song mode, for convenient chaining of sequences into songs; and open mode, for flexible structuring. Memory capacity is 16 songs, 126 sequences and about 50,000 notes on the 520ST (130,000 on the 1040ST). Beginners might fancy the **MIDI Recording Studio** ($39), a bare-bones version of the KCS track mode providing six-track recording. **The Copyist** ($195) is a publication-quality score editing and printing program loadable from the KCS and having access to its data and play functions.

Dr. T's Music Software, 66 Louise Road, Chestnut Hill, MA (617) 244-6954. PRESS.
CIRCLE 298 ON READER SERVICE CARD

FLEET STREET EDITOR

This desktop publishing package (about $150 in English pounds) has a complete disk of library graphics and is ideal for newsletters, sales bulletins, restaurant menus and circulars. The two Fleet Street Publisher packages for the ST let you produce multi-page documents with editable page layouts and more, in addition to those features offered at the Editor level. Features include kerning (changing the spacing between characters to make words more attractive), picture sizing, cropping and output to dot-matrix or laser printers.

Mirrorsoft, Maxwell House, 74 Worship Street, London EC2A 2EN. 01-377 4645. PRESS.
CIRCLE 232 ON READER SERVICE CARD

TYPESETTER ELITE

Mouse- and menu-driven **TypeSetter Elite** has 23 built-in fonts and the ability to load custom fonts. Underline and outline text, change intensity, copy and move text, grab entire screens and print a full page, screen dump, free form, index cards, labels or Rolodex cards. TypeSetter Elite supports both color and monochrome systems with equal resolution, and you can preview your output before printing. A text formatter is provided to move ASCII files into the program.

$49.95. XLEnt Software, P.O. Box 5228, Springfield, VA 22150. (703) 569-8881. PRESS.
CIRCLE 233 ON READER SERVICE CARD

*A correction for those who have tried to call Mountain Magic Software about the programs under Wizard Wares (ST New Products, **Antic**, January, 1987): The actual phone number is (704) 264-3021.*

LASERIMAGE 2000

The **LaserImage 2000** also gives you near-typeset quality, and a pop-in cartridge lets it emulate an HP LaserJet+. A second cartridge slot lets you change fonts instantly. The LaserImage 2000 prints full-page, 300×300 dpi graphics at eight pages per minute. Both serial and parallel interfaces are included.

$3,495. Personal Computer Products Inc., 11590 W. Bernardo Court, San Diego, CA 92127. (619) 485-8411. PRESS.
CIRCLE 236 ON READER SERVICE CARD

LDW BASIC COMPILER, VERSION 1.1

Along with improved packaging and an updated manual, the **LDW BASIC Compiler** now has faster screen output, an enhanced GEM environment, multiline statements and improved runtime error-handling. Arithmetic functions are four times faster and compilation is up to 70% faster than version 1.0.

$69.95 ($25 for registered users of version 1.0). Logical Design Works Inc., 780 Montague Expressway, Suite 205, San Jose, CA 95131. (408) 435-1445. PRESS.
CIRCLE 289 ON READER SERVICE CARD

AES/VDI/LINE A WITH MARK WILLIAMS C

Mark Williams C now has AES/VDI/Line A documentation—the manual uses dozens of examples to explain how to use GEM while retaining the quality of the original manual. Line A deals with the system graphics procedures used by GEM.

Mark Williams Company, 1430 W. Wrightwood Avenue, Chicago, IL 60614. (312) 472-6659. FINAL.
CIRCLE 238 ON READER SERVICE CARD

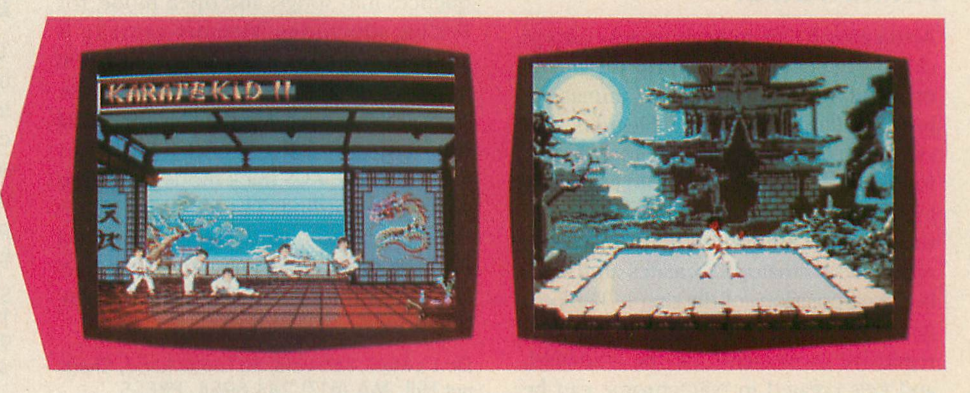
*New ST product notices are compiled from information provided by the products' manufacturers. **Antic** assumes no responsibility for the accuracy of these notices or the performance of the product. Each mention is followed by a code word indicating that, at press time, **Antic** had seen a FINAL marketable version, near-final BETA, earlier ALPHA, incomplete DEMO, or PRESS release.*



STIMULATION
FROM THE WORLD'S LARGEST ST PUBLISHER

STupendous!

Karate Kid Part II
Guide Daniel through fight after fight against ever more powerful advesaries. Then face the evil Chozen himself in the Castle of King Shohashi, where you must discover the secret of the drum - or die! But the fighting isn't all: Catch flies with chopsticks and break ice with your bare hand in full-color, animated graphic sequences. Daniel LaRusso faced the challenge and became a hero. What will you do?
Color only. $39.95



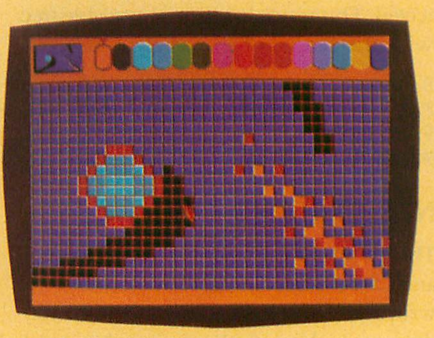
STaggering!

Shuttle II
It's the 1990's and this new Shuttle can take off and fly with the minimum of controls. Decide the launch and landing details then take the seat of Flight Commander for liftoff. Find a fualty Satelite and go out with your jet pack and haul it in. Then return to Earth. Can you keep from burning up? Can you land without crashing? Find out now in this fantastic simulation!
Color only. $39.95

STunning

Pinball Factory
Play great pinball and even design your own screens. Place tabs, bumpers, and ball traps to get the action just right, then use the powerful drawing system to put in the walls. Add flair with a graphic logo. You can even set the scoring, gravity, speed and elasticity! Play the best pinball game you can imagine! .There are even tilt controls to let you "bump" the machine!
Color only. $39.95





STriking!

Eight Ball
The poolhall favorite is here! Realistic graphics and ingeniously simple mouse control make this one a sure bet.
Color or Monochrome. $29.95

Trivia Challenge
Nearly 4000 questions on International Sport, The Arts, Pop Music, Science and General knowledge. Arcade style play keeps the game quick. You can even put in your own questions!
Color or Monochrome. $39.95



Dealer inquiries welcome • Visa and Mastercard accepted • Add $3.00 shipping and handling to each order.



576 S. TELEGRAPH, PONTIAC, MI 48053
ORDERS AND INFORMATION (313) 334-5700



CIRCLE 033 ON READER SERVICE CARD

SOFTWARE LIBRARY

Antic type-in listing section includes every full-length program from this issue. Listings are easier to type and proofread, easy to remove and save in a binder if you wish.

ST RESOURCE

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

Antic program listings are typeset on the Star's SB-10 printer—from Star Micronics, Inc., 200 Park Avenue, New York, NY 10166.

TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789 0123456789

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL S
	CTRL A		CTRL T
	CTRL B		CTRL U
	CTRL C		CTRL V
	CTRL D		CTRL W
	CTRL E		CTRL X
	CTRL F		CTRL Y
	CTRL G		CTRL Z
	CTRL H		ESC ESC
	CTRL I		ESC CTRL –
	CTRL J		ESC CTRL =
	CTRL K		ESC CTRL +
	CTRL L		ESC CTRL *
	CTRL M		CTRL .
	CTRL N		CTRL ;
	CTRL O		CTRL =
	CTRL P		ESC SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	人 CTRL ,		CTRL X
	人 CTRL A		CTRL Y
	人 CTRL B		CTRL Z
	人 CTRL C		ESC SHIFT CLEAR
	人 CTRL D		ESC SHIFT INSERT
	人 CTRL E		ESC CTRL TAB
	人 CTRL F		ESC SHIFT TAB
	人 CTRL G		人 CTRL .
	人 CTRL H		人 CTRL ;
	人 CTRL I		人 SHIFT –
	人 CTRL J		ESC CTRL 2
	人 CTRL K		ESC CTRL DELETE
	人 CTRL L		ESC CTRL INSERT
	人 CTRL M		
	人 CTRL N		
	人 CTRL O		
	人 CTRL P		
	人 CTRL Q		
	人 CTRL R		
	人 CTRL S		
	人 CTRL T		
	人 CTRL U		
	人 CTRL V		
	人 CTRL W		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, ***hold it down*** while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key. Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key 人 instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

SPECIAL		STANDARD	
	CTRL F	/	/
	CTRL G	\	SHIFT | +
	CTRL N	_	SHIFT –
	CTRL R	-	–
	CTRL S	+	+

HOW TO USE TYPO ST

TYPO ST is the automatic proofreading program for checking **Antic's** ST BASIC type-in listings. It finds any program line where you made a typing mistake.

Type in TYPO ST and SAVE a copy to disk before you RUN it. Now type RUN in the command window and press the [RETURN] key, or click on RUN from the RUN menu.

TYPO ST first asks for the name of the file to check. Type the desired filename and press [RETURN]. (TYPO ST will proofread itself if you type TYPOST.BAS as the filename.) Next, TYPO ST asks where you want the TYPO table printed. Type [S] [RETURN] for Screen, or [P] [RETURN] for Printer.

TYPO ST now reads your ST BASIC program and prints out a table of four-number codes—and the line number for each code. Compare your printed TYPO ST table with the **Antic** TYPO ST table published at the end of the program you are checking. If any of your four-number codes don't match the magazine's codes, you have made a typing mistake somewhere in that line. Carefully recheck your line against the published version.

Antic uses a word processor to format ST BASIC listings for publication, so we can indent lines and make the program structure more understandable. ST BASIC doesn't allow indentation and will strip off any spaces between the line number and the first BASIC instruction. Therefore, TYPO ST ignores space characters and does not care how far instructions are spaced apart.

TYPO ST cannot determine if two different characters have been switched within a line. For example, PRINT and PRNIT will look the same to TYPO ST. However, ST BASIC itself catches this error and points it out to you.

```
1000  ' TYPO/ST, (c) 1986 Antic Publishing, by Bill Marquardt
1010   DISK=1: OUTPUT=2: TRUE=(-1): FALSE=0: CHECKSUMMING=TRUE
1020   TV=FALSE: PRINTER=FALSE
1030   print "File to Check:": input FILENAME$: print "Output on:"
1040   print "(S)creen or ": print "(P)rinter ": input DEVICE$
1050   if( DEVICE$="p" )or( DEVICE$="P" )then PRINTER=TRUE else TV=TRUE
1060   if TV then print "Checksum for file: ": print FILENAME$: print
1070   if PRINTER then lprint "Checksum for file: ";FILENAME$: lprint
1080   open "I", #DISK, FILENAME$
1090   while CHECKSUMMING
1100      LINENUMBER=0: CHECKSUM=0: gosub GETALINE
1110      DECIMAL=CHECKSUM: gosub DECTOHEX
1120      OUTPUT$=str$( LINENUMBER )+" :"+HI$+LO$
1130      if PRINTER then lprint OUTPUT$ else print OUTPUT$
1140   wend
1150   close DISK
1160  end
1170  GETALINE:
1180   BLINE$="": on error goto 1150
1190   GOTALINE=FALSE
1200   while not GOTALINE
1210      line input#DISK, BLINE$: if len( BLINE$ )>1 then GOTALINE=TRUE
1220   wend
1230   LINENUMBER=val( BLINE$ )
1240   for CHAR=1 to len( BLINE$ )
1250      OK=TRUE: CHARACTER$=mid$( BLINE$, CHAR, 1 )
1260      if CHARACTER$=" " then OK=FALSE
1270      if OK then CHECKSUM=CHECKSUM+asc( CHARACTER$+chr$( 0 ))
1280   next CHAR
1290  return
1300  DECTOHEX:
1310   DECIMAL=abs( DECIMAL )
1320   HI=int( DECIMAL/256 ): LO=( DECIMAL-( HI*256 ))
1330   HH=int( HI/16 ): HL=( HI-( HH*16 ))
1340   LH=int( LO/16 ): LL=( LO-( LH*16 ))
1350   HI$=chr$( 48+HH-( 7*( HH>9 )))+chr$( 48+HL-( 7*( HL>9 )))
1360   LO$=chr$( 48+LH-( 7*( LH>9 )))+chr$( 48+LL-( 7*( LL>9 )))
1370  return
```

1000 :110B	1060 :13E7	1120 :0A48	1180 :089A	1240 :079B	1300 :0352	1360 :0C29
1010 :0EA2	1070 :140E	1130 :1000	1190 :04C6	1250 :0AEB	1310 :0667	1370 :036B
1020 :071B	1080 :0713	1140 :0274	1200 :0680	1260 :08BB	1320 :0B13	
1030 :12D2	1090 :0661	1150 :0408	1210 :11B9	1270 :0F36	1330 :07E3	
1040 :10E6	1100 :0BBD	1160 :01FF	1220 :0273	1280 :03A8	1340 :0804	
1050 :11A2	1110 :09F0	1170 :034C	1230 :0716	1290 :036C	1350 :0C0E	

HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads **Antic**'s type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:). Type NEW, then ENTER "D:FILENAME"[RETURN](Cassette—ENTER "C:). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "↖":POSITION 11,1:? "TYPO II "

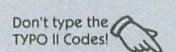
EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "↖":POSITION 11,1:? " TYPO II
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

27 files at your fingertips

MULTI-AUTORUN

Article on page 47

LISTING 1




```
JM 10 REM MULTI-AUTORUNS WITH ATARI DOS
RI 20 REM BY BILL BODENSTEIN
HA 30 REM (c) 1987, ANTIC PUBLISHING
RU 40 DIM A$(1)
GN 50 IF PEEK(5498)=76 AND PEEK(5496)=166
    THEN 70
GV 60 ? "Please boot an Atari DOS 2.0 or
   2.5":? "disk before running this progr
   am.□":GOTO 430
CX 70 GRAPHICS 0:POKE 712,66
QE 80 ? :? "   This program permanently m
   odifies  your DOS.SYS file, ";
YJ 85 ? "permitting you to  run several A
   UTORUN.SYS files at boot-time."
XK 86 ? :? :? "Continue Y (Y/N)←←←←←←←←←";
   :INPUT A$:POKE 712,0
VZ 88 IF A$<>"Y" THEN ? :? "Aborted!":GOT
   O 430
EE 90 ? :? "Make sure your DOS disk is in
    drive 1.":? "Press  RETURN";:INPUT #1
   6,A$:? "↑↑"
HW 100 SASALO=PEEK(1804):SASAHI=PEEK(1805
   ):CLSELO=PEEK(5499):CLSEHI=PEEK(5500)
JS 110 SASA=SASALO+SASAHI*256:LOMEM=PEEK(
   743)+PEEK(744)*256
MU 150 ? "Modifying DOS..."
CF 160 RESTORE :TRAP 300
XU 170 READ N
CC 180 SASA=SASA+1:LOMEM=LOMEM+1
ZJ 190 IF N<0 THEN POKE SASA-1,CLSELO:REA
   D N:IF N<0 THEN N=CLSEHI:GOTO 180
WM 200 IF N>=512 THEN N=SASAHI+N-512
PU 210 IF N>=256 THEN N=SASALO+N-256
TC 220 POKE SASA-1,N:GOTO 170
UJ 300 POKE 5499,SASALO:POKE 5500,SASAHI
XD 310 SASAHI=INT(SASA/256):SASALO=SASA-S
   ASAHI*256
SW 320 POKE 1804,SASALO:POKE 1805,SASAHI
KH 330 POKE 744,INT(LOMEM/256):POKE 743,L
   OMEM-PEEK(744)*256:TRAP 40000
ZH 400 ? "Writing modified DOS..."
ZL 410 CLOSE #1:OPEN #1,8,0,"D1:DOS.SYS":
   CLOSE #1
HW 420 ? "DOS modified!□"
NZ 430 END
EG 500 DATA 152,72,32,-1,-1,104,16,4,201,
   136,208,16
OL 510 DATA 238,302,512,169,292,141,84,3,
   169,512,141,85,3,76,114,21
KU 520 DATA 169,48,141,302,512,76,-1,-1
UN 530 DATA 68,49,58,65,85,84,79,82,85,78
   ,48,46,83,89,83,155
```

Atari power finds the winners

WORD SEARCHER

Article on page 23

LISTING 1

Don't type the TYPO II Codes!

```
SP 2 REM WORD FINDER
ZF 4 REM BY KEVIN PECK
GI 6 REM (c) 1987, ANTIC PUBLISHING
JZ 8 BRK=1:IF PEEK(53279)=5 THEN BRK=0
OH 10 GRAPHICS 0:POKE 710,96:DIM WORD$(25
   ),GRID$(576),L$(14),CL$(14),BYTE(8)
VA 20 TRAP 25:READ WIDTH:RESTORE :GOSUB 1
   510:GOTO 30:REM DO INITIALIZATION
UT 25 ? :? :? :? :? "   I can't find any
   puzzle data!":? :? :? :END
RI 30 GOTO 270:REM LOOK FOR 1ST. LETTER
DO 40 REM FIND REST OF WORD
HN 80 IF X+(DX*L)<0 OR X+(DX*L)>WIDTH+1 T
   HEN 235
KG 90 IF Y+(DY*L)<0 OR Y+(DY*L)>HEIGHT+1
   THEN 235
IM 100 EX=SX+DX:EY=SY+DY:P=2:GX=X+DX:GY=Y
   +DY
NA 105 EX1=EX:EY1=EY
FP 110 LOCATE EX,EY,Z:Z=Z+128:COLOR Z:PLO
   T EX,EY
AJ 120 IF WORD$(P,P)<>GRID$((GY-1)*WIDTH+
   GX,(GY-1)*WIDTH+GX) THEN 210
QT 130 P=P+1:IF P>L THEN POP :GOTO 1370
AB 140 EX=EX+DX:EY=EY+DY:GX=GX+DX:GY=GY+D
   Y:GOTO 110
QW 150 REM
DO 160 POSITION 17,7:? "W↓←O↓←R↓←D":GOTO
   235
HK 210 LOCATE EX,EY,Z:Z=Z-128:COLOR Z:PLO
   T EX,EY
XC 220 P=P-1:IF P=1 THEN 235
VG 230 EX=EX-DX:EY=EY-DY:GOTO 210
ZT 235 RETURN
AI 240 REM ----------
FY 270 I=1
YQ 280 READ WORD$:L=LEN(WORD$)
EP 290 IF L<13 THEN POSITION 26+INT((12-L
   )/2),10:? WORD$:GOTO 320
JF 300 POSITION 26,10:? WORD$(1,12):POSIT
   ION 26,11:IF L<25 THEN ? WORD$(13,L):G
   OTO 320
EE 310 ? WORD$(13,24)
DH 320 IF L<=WIDTH OR L<=HEIGHT THEN 490
HB 330 POSITION 26,14:? "This word is"
OJ 340 POSITION 26,15:? "  too LONG"
GX 350 POSITION 26,16:? "for puzzle!!"
PI 360 GOTO 820
RC 370 REM
XQ 420 POKE 106,PEEK(740):POKE 53277,0:PO
   KE 559,34:FOR I=0 TO 2:POKE 53248+I,0:
   NEXT I:GRAPHICS 0:END
QV 430 REM
JG 490 Y=1
WC 495 SY=Y+STARTROW-1
IK 500 X=1
FB 505 SX=X+STARTCOL-1
OB 510 LOCATE SX,SY,Z:Z=Z+128:COLOR Z:PLO
   T SX,SY
JI 520 IF WORD$(1,1)<>GRID$((Y-1)*WIDTH+X
   ,(Y-1)*WIDTH+X) THEN 700
QW 530 REM
AC 590 DX=-1:POKE 77,0:IF BRK THEN POKE 1
   6,112:POKE 53774,112
UI 595 DY=-1
ST 600 IF DX=0 AND DY=0 THEN 620
VS 610 GOSUB 80
KG 620 IF DY<1 THEN DY=DY+1:GOTO 600
ZD 625 IF DX<1 THEN DX=DX+1:GOTO 595
GU 630 FOUND=1
PV 700 LOCATE SX,SY,Z:Z=Z-128:COLOR Z:PLO
   T SX,SY
ST 710 IF X<WIDTH THEN X=X+1:GOTO 505
ML 711 IF Y<HEIGHT THEN Y=Y+1:GOTO 495
GI 720 FOUND=0
HX 790 POSITION 27,14:? "Word could"
FU 800 POSITION 26,15:? "NOT be found"
GZ 810 POSITION 27,16:? "in puzzle!"
PW 820 POKE 710,48:POKE 712,48:GOSUB 1050
WY 830 MISS=MISS+1
ER 840 POSITION 35,5:IF MISS<10 THEN POSI
   TION 36,5
KB 850 ? MISS
XH 860 IF CFLAG=3 THEN 420
VI 870 IF I<COUNT THEN I=I+1:GOTO 280
RJ 880 REM
OR 930 POSITION 26,10:? CL$:POSITION 26,1
   1:? CL$:POKE 710,0:POKE 712,0
KW 940 POSITION 28,15:? "FINISHED":FLASH=
   0:GOSUB 1060
DT 950 IF CFLAG=6 THEN 930
OA 960 GOTO 420
RI 970 REM
WV 1050 POSITION 27,19:? "START▮▮Cont"
YY 1060 POSITION 27,21:? "OPTION▮▮End":SF
   LG=0
GD 1070 NY=EY1-DY:NX=EX1-DX
IS 1072 IF (FOUND) THEN LOCATE NX,NY,Z:CO
   LOR (Z+FLASH):PLOT NX,NY
WS 1073 STMP=PEEK(53279):IF STMP<7 THEN S
   FLG=STMP
GY 1074 IF NX<>EX OR NY<>EY THEN NY=NY+DY
   :NX=NX+DX:GOTO 1072
HO 1075 IF (SFLG=0 OR Z>128) THEN 1070
MX 1080 CFLAG=3:IF SFLG=6 THEN CFLAG=6
IX 1090 REM
JU 1130 POSITION 26,10:? CL$:POSITION 26,
   11:? CL$:POKE 710,96:POKE 712,96
NE 1140 POSITION 26,14:? CL$:POSITION 26,
   15:? CL$:POSITION 26,16:? CL$
GH 1150 POSITION 26,19:? CL$:POSITION 26,
   21:? CL$:SFLG=0:RETURN
IQ 1160 REM
UJ 1210 IF PEEK(195)<>6 THEN 1270
EZ 1220 POSITION 26,14:? "Unexpectedly"
CA 1230 POSITION 26,15:? "out of words"
QK 1240 POSITION 28,16:? "in DATA!":POKE
   710,48:POKE 712,48
TA 1250 GOSUB 1060:IF CFLAG=6 THEN 1220
PT 1260 GOTO 420
LL 1270 POSITION 27,14:? "Unexpected"
VS 1280 POSITION 26,15:? "ERROR # ";PEEK(
   195):POKE 710,48:POKE 712,48
NM 1290 POSITION 26,16:? "in LINE ";PEEK(
   186)+256*PEEK(187)
ZG 1300 GOSUB 1060:IF CFLAG=6 THEN 1270
PG 1310 GOTO 420
II 1320 REM
QW 1370 POSITION 27,14:? "Word FOUND"
EC 1380 POSITION 26,15:? "at indicated"
FT 1390 POSITION 28,16:? "location"
ZW 1400 POKE 710,192:POKE 712,192
JM 1410 FND=FND+1
SA 1420 POSITION 35,4:IF FND<10 THEN POSI
   TION 36,4
TE 1430 ? FND
CE 1440 GOSUB 1050:IF CFLAG=3 THEN 420
KB 1450 GOSUB 210:GOTO 870
IW 1460 REM
HD 1510 POKE 752,1:GOSUB 160:TRAP 1520:RE
   AD WIDTH,HEIGHT:GOTO 1570
CX 1520 POSITION 2,10
YM 1530 IF PEEK(195)<>8 THEN 1560
UJ 1540 ? "First DATA statement must cont
   ain      WIDTH and HEIGHT of grid. One
```

continued on next page

```
   or"
QA 1550 ? "both of these numbers are missing!":END
BF 1560 ? "ERROR #";PEEK(195);" in LINE ";PEEK(186)+256*PEEK(187):END
GI 1570 IF WIDTH>24 OR WIDTH<0 THEN POSITION 2,10:? "Improper WIDTH value in DATA!":END
SI 1580 IF HEIGHT>24 OR HEIGHT<0 THEN POSITION 2,10:? "Improper HEIGHT value in DATA!":END
BL 1590 LINE=0:FOR I=1 TO WIDTH*HEIGHT STEP WIDTH:LINE=LINE+1
BM 1600 READ WORD$:L=LEN(WORD$):IF L=WIDTH THEN 1640
QZ 1610 POSITION 2,10:? "Width of GRID DATA element #";LINE
EW 1620 IF L<WIDTH THEN ? "is too short!":END
VH 1630 ? "is too long!":END
DW 1640 GRID$(I,I+WIDTH-1)=WORD$:NEXT I
SU 1650 TRAP 1660:READ COUNT:GOTO 1750
QZ 1660 POSITION 2,10:? "DATA statement following GRID DATA":? "statements does not contain the"
XT 1670 ? "number of WORDS to search for. Please check number of GRID DATA and"

GY 1680 ? "check for possible missing WORD COUNT DATA statement.":END
JJ 1690 REM
ZE 1750 H=PEEK(106)-8:POKE 106,H:GRAPHICS 0:POKE 752,1:POKE 710,96:GOSUB 160:POSITION 14,10:? "FINDER"
KK 1755 GOSUB 160:POSITION 14,10:? "FINDER":POSITION 12,13:? "BY KEVIN":POSITION 16,12:? "P↓↓←C↓←K"
ME 1760 BYTE(0)=0:BYTE(1)=128:BYTE(2)=192:BYTE(3)=224:BYTE(4)=240:BYTE(5)=248:BYTE(6)=252:BYTE(7)=254:BYTE(8)=255
TM 1770 STARTCOL=INT((24-WIDTH)/2+0.5):FLASH=128
EC 1780 STARTROW=INT((24-HEIGHT)/2+0.5)
LD 1790 P0=WIDTH:IF P0>8 THEN P0=8
WX 1800 P1=WIDTH-8:IF P1>8 THEN P1=8
XL 1810 IF P1<0 THEN P1=0
ZC 1820 P2=WIDTH-16:IF P2<0 THEN P2=0
ID 1830 POKE 54279,H:POKE 559,46:POKE 53277,3
SA 1840 POKE 53256,3:POKE 53257,3:POKE 53258,3
ID 1850 POKE 704,145:POKE 705,145:POKE 706,145:POKE 712,96
XM 1860 PMB=H*256+512:POKE 623,1
GM 1870 FOR I=PMB TO PMB+15+(STARTROW*4):POKE I,0:POKE I+128,0:POKE I+256,0:NEXT I
CV 1880 FOR X=I TO I+(HEIGHT*4)-1:POKE X,BYTE(P0):POKE X+128,BYTE(P1):POKE X+256,BYTE(P2):NEXT X
EJ 1890 FOR I=X TO PMB+127:POKE I,0:POKE I+128,0:POKE I+256,0:NEXT I
KH 1900 X=48+(STARTCOL*4)
BW 1910 POKE 53248,X:POKE 53249,X+32:POKE 53250,X+64
IU 1920 REM
JC 1970 ? "◥":POKE 82,STARTCOL:POSITION STARTCOL,STARTROW
IL 1980 LINE=1:FOR I=1 TO LEN(GRID$) STEP WIDTH
UN 1990 ? GRID$(I,I+WIDTH-1);:IF LINE<24 THEN ?
XT 2000 LINE=LINE+1:NEXT I
IA 2010 REM
RO 2060 POSITION 25,0:POKE 82,25
CF 2070 L$="┃                ┃"
NE 2080 CL$="┣━━━━━━━━━━━━━━━━┫"
WQ 2090 ? "┏━━━━━━━━━━━━━━━━┓"
GF 2100 ? "┃  COMPUTER  ┃"
PO 2110 ? "┃ WORD  FIND ┃":? CL$
EK 2120 ? "┃ # FOUND  0 ┃"
IW 2130 ? "┃ # MISS   0 ┃":? CL$
RS 2140 ? "┃SEARCH  WORD┃"
PJ 2150 ? CL$:? L$:? L$:? L$:? L$:? CL$
JQ 2160 ? L$:? L$:? L$:? CL$:? L$:? L$
NU 2170 ? L$:? L$:? L$
AM 2180 ? "┗━━━━━━━━━━━━━━━━┛";
RJ 2190 POKE 82,2:FND=0:MISS=0:TRAP 1210
IR 2200 CL$="            ":REM 12 SPACES
AH 2210 RETURN
```

LISTING 2

```
SP 2 REM WORD FINDER
ZF 4 REM BY KEVIN PECK
GI 6 REM (c) 1987, ANTIC PUBLISHING
FH 2220 DATA 8,10
RC 2230 DATA AKNFEAKC
JC 2240 DATA DDRKRDVA
XA 2250 DATA NOWIECST
VJ 2260 DATA GQGDSMNT
PS 2270 DATA EUZKAASL
BX 2280 DATA DFSMHCLE
ND 2290 DATA TNAPPBOH
MV 2300 DATA MIETDKWE
PU 2310 DATA NLLUBDMR
VQ 2320 DATA EWJUOZDD
LZ 2330 DATA 6
EL 2340 DATA FROG
JX 2350 DATA ELEPHANT
ML 2360 DATA CATTLEHERD
MI 2370 DATA DOG
QG 2380 DATA PHASER
FX 2390 DATA BULL
```

LISTING 3

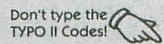
```
SP 2 REM WORD FINDER
ZF 4 REM BY KEVIN PECK
GI 6 REM (c) 1987, ANTIC PUBLISHING
JA 2220 DATA 24,24
FP 2230 DATA PKAENGNITSILMARGORPPAIED
BH 2240 DATA WEQBGAOWCSIFALDECMDODNSC
BP 2250 DATA DDJACKTRAMIELEORRUVKCCAM
FG 2260 DATA NIODZKIKCVDLNCPNEGASIZNN
CQ 2270 DATA BSSMRSMNEIEFXOMATARHLALA
FV 2280 DATA WKNPAIDTSNDNYRXENMPTLCEO
JW 2290 DATA ADDOPWWKKVHEIJISIAZGAOXK
WI 2300 DATA ERAWMEEMRAPMDZJDRWAEBJCN
DX 2310 DATA KIJXNTNSICHUMNAGPQHXKPAD
DV 2320 DATA DVOTTKXFHWOGBENGNCISAUSZ
WN 2330 DATA NEYEXYTRIHTENONHASTPRCSO
RK 2340 DATA ASSACPNVGUKOIPGSOMOYTLEN
MN 2350 DATA TNTHIWGMWIPTSNHAZSCOAUTD
LR 2360 DATA SOIEDEACVNUWOSTSDENIDSTA
MC 2370 DATA RKCQMOMNULZYAMPECNRMTEEX
CG 2380 DATA OSKKXKLAOCUTIRISRTSDLNID
ZE 2390 DATA TISAPCZSTEHNAJSPYFABWKAM
XS 2400 DATA IEWTSBEKSADTXAIGPNANUABI
SS 2410 DATA NCOLORINDIRECTIONTOCQUPF
AQ 2420 DATA OXNYHWBYZTSIHFNXHCAOENFS
XR 2430 DATA MZXGMTMRCABMOUICKBNULOMB
PQ 2440 DATA SUISLCEYONDZSCUJLWXXKJOK
BT 2450 DATA LHRCZITISKTEHOSENSYDIMBT
CY 2460 DATA RNVHDDERDNUHTHGIEWNECRCG
GZ 2470 DATA 20
SV 2480 DATA ATARI
FT 2490 DATA ONETHIRTYXE
IM 2500 DATA EIGHTHUNDRED
QU 2510 DATA DISKDRIVE
PX 2520 DATA CASSETTE
PV 2530 DATA DISKETTE
TD 2540 DATA JACKTRAMIEL
DZ 2550 DATA TOUCHTABLET
XS 2560 DATA JOYSTICK
RV 2570 DATA HIGHRESOLUTIONGRAPHICS
SA 2580 DATA COLORINDIRECTION
YS 2590 DATA PRINTER
AT 2600 DATA INTERFACE
QJ 2610 DATA ANTICMAGAZINE
ER 2620 DATA MONITORSTAND
DX 2630 DATA FIVETWENTYST
LW 2640 DATA GEM
EG 2650 DATA TRAKBALL
FU 2660 DATA CABLE
IW 2670 DATA PROGRAMLISTING
```

DVORAK KEYBOARD

Article on page 36

LISTING 1

Don't type the TYPO II Codes!



```
HE 10 REM DVORAK KEYBOARD
KN 20 REM BY DAVID YEARKE
FW 30 REM (c) 1985, ANTIC PUBLISHING
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
QG 70 FN$="D:DVORAK.EXE":REM THIS IS THE
   NAME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "▣TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "▣TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "■COMPLETED■
   "
IQ 1000 DATA 417
QC 1010 DATA 2552550000291480300320830301
   69000133012169029133013169048133010169
   029133011169083141231002169
EL 1020 DATA 0301412320021691001410080021
   69029141009002169255141081030141082030
   096169048141043002173001029
TV 1030 DATA 1330121730020291330131730980
   29133010173099029133011173079030141231
   002173080030141232002173077
YE 1040 DATA 0301410080021730780301410090
   02076083030138072173009210205242002208
   005174241002208123170201159
HN 1050 DATA 2080101732550020732551412550
   02176099201152208010173082030073255141
   082030176085201157208010173
IY 1060 DATA 0810300732551410810301760710
   41063201017208005142220002240060134124
   142242002173081030208022138
FW 1070 DATA 0410642080171381331240410631
   62004202221073030240060224000208246173
   082030208018166124138041192
AU 1080 DATA 1331241380410631701890090300
   05124133124165124141252002169003141241
   002169000133077173082030240
DY 1090 DATA 0071730810302400021690481410
   43002104170104064165124073128133124208
   215035057062003004045006007
LE 1100 DATA 0400090000610120180140150050
   17001019020022047002024025026027028029
   030031046033016021036037023
RK 1110 DATA 0390100410340560440430320380
   48049050005105205305405501105804205906
   0013008063006007014015000000
MA 1120 DATA 0000000000000000001650121410010
   29165013141002029165010141098029165011
   141099029173231002141079030
YQ 1130 DATA 1732320021410800301730080021
   41077030173009002141078030076003029000
   000000000000000000000000000
CH 1140 DATA 0000000000000000000000002260
   02227002084030
```

LISTING 2

```
0100 ;PARTIAL DVORAK KEYBOARD
0110 ;BY DAVE YEARKE
0120 ;(c) 1986, ANTIC PUBLISHING
0130 ATRACT = $4D
0140 CH  =   $02FC
0150 CH1 =   $02F2
0160 DOSINI = $0C
0170 DOSVEC = $0A
0180 HELPFG = $02DC  ;XL/XE ONLY
0190 HOLDCH = $7C
0200 INITAD = $02E2
0210 KBCODE = $D209
0220 KEYDEF = $79
0230 KEYDEL = $02F1
0240 KRPDEL = $02D9  ;XL/XE ONLY
0250 MEMLO = $02E7
0260 SRTIMR = $022B
0270 SSFLAG = $02FF
0280 START = $1D00
0290 VKEYBD = $0208
0300 ;SYSTEM RESET TRAP
0310     *=  START
0320 RSTTRAP JSR DUMMY
0330     LDA # <RSTTRAP ;RESET TRAP
0340     STA DOSINI  ;ADDRESS IN DOSIN
I
0350     LDA # >RSTTRAP ;LO BYTES
0360     STA DOSINI+1 ;HI BYTES
0370     LDA # <DOSTRAP ;TRAP DOS CALL

0380     STA DOSVEC
0390     LDA # >DOSTRAP
0400     STA DOSVEC+1
0410     LDA # <BOTTOM ;END OF TABLE
0420     STA MEMLO   ;RESET MEMLO
0430     LDA # >BOTTOM
0440     STA MEMLO+1
0450     LDA # <HANDLER ;ADDRESS OF
0460     STA VKEYBD  ;POKEY HANDLER
0470     LDA # >HANDLER ;INTO VKEYBD
0480     STA VKEYBD+1
0490     LDA #$FF
0500     STA ARFLAG
0510     STA KBFLAG
0520     RTS
0530 DOSTRAP LDA #$30
0540     STA SRTIMR  ;AUTO-REPEAT ON.
0550     LDA RSTTRAP+1
0560     STA DOSINI
0570     LDA RSTTRAP+2
0580     STA DOSINI+1
0590     LDA BYEBYE+1
0600     STA DOSVEC
0610     LDA BYEBYE+2
0620     STA DOSVEC+1
0630     LDA MEMHOLD
0640     STA MEMLO
0650     LDA MEMHOLD+1
0660     STA MEMLO+1
0670     LDA KEYHOLD ;REPLACE ORIGINAL

0680     STA VKEYBD  ;HANDLER
0690     LDA KEYHOLD+1
```

continued on next page

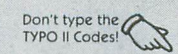
```
0700        STA VKEYBD+1
0710 BYEBYE JMP DUMMY
0720 ;POKEY INTERRUPT ROUTINE
0730 HANDLER TXA
0740        PHA
0750        LDA KBCODE
0760        CMP CH1
0770        BNE NEWKEY
0780        LDX KEYDEL
0790        BNE SETTIMES
0800 NEWKEY TAX        ;KEY VALUE INTO X
.
0810        CMP #$9F       ;IS IT CTL-1?
0820        BNE CTL4       ;IF NOT, BRANCH.
0830        LDA SSFLAG     ;SCREEN FREEZE FL
AG.
0840        EOR #$FF
0850        STA SSFLAG
0860        BCS SETDELAY ;SET TIMERS.
0870 CTL4 CMP #$98
0880        BNE CTL5
0890        LDA KBFLAG
0900        EOR #$FF       ;TOGGLE FLAG.
0910        STA KBFLAG
0920        BCS SETDELAY
0930 CTL5 CMP #$9D
0940        BNE HELP
0950        LDA ARFLAG
0960        EOR #$FF
0970        STA ARFLAG
0980        BCS SETDELAY
0990 HELP AND #$3F     ;MASK HIGH BITS.
1000        CMP #$11
1010        BNE CONVERT
1020        STX HELPFG
1030        BEQ SETDELAY
1040 CONVERT STX HOLDCH
1050        STX CH1
1060 ARROWS LDA ARFLAG
1070        BNE DVORAK
1080        TXA
1090        AND #$40       ;TEST SHIFT BIT.
1100        BNE DVORAK
1110        TXA
1120        STA HOLDCH
1130        AND #$3F
1140        LDX #$04
1150 ARLOOP DEX
1160        CMP ARRTAB,X ;CHECK TABLE
1170        BEQ NEWARR   ;ARROW
1180        CPX #$00     ;DONE?
1190        BNE ARLOOP
1200 DVORAK LDA KBFLAG ;CHECK TYPE
1210        BNE PUTCH
1220        LDX HOLDCH
1230        TXA
1240        AND #$C0
1250        STA HOLDCH
1260        TXA
1270        AND #$3F
1280        TAX
1290        LDA TABLE,X
1300        ORA HOLDCH
1310        STA HOLDCH
1320 PUTCH LDA HOLDCH
1330        STA CH
1340 SETDELAY LDA #$03 ;DEBOUNCE
1350        STA KEYDEL
1360        LDA #$00
1370        STA ATRACT
1380 SETTIMES LDA KBFLAG
1390        BEQ STIME
1400        LDA ARFLAG
1410        BEQ STIME
1420        LDA #$30
1430 STIME STA SRTIMR
1440        PLA
1450        TAX
1460        PLA
1470        RTI
1480 NEWARR LDA HOLDCH
1490        EOR #$80
1500        STA HOLDCH
1510        BNE PUTCH
1520 ;DVORAK OFFSET TABLE
1530 TABLE .BYTE $23,$39,$3E,$03,$04,$
2D,$06,$07
1540        .BYTE $28,$09,$00,$3D,$0C,$12
,$0E,$0F
1550        .BYTE $05,$11,$01,$13,$14,$16
,$2F,$02
1560        .BYTE $18,$19,$1A,$1B,$1C,$1D
,$1E,$1F
1570        .BYTE $2E,$21,$10,$15,$24,$25
,$17,$27
1580        .BYTE $0A,$29,$22,$38,$2C,$2B
,$20,$26
1590        .BYTE $30,$31,$32,$33,$34,$35
,$36,$37
1600        .BYTE $0B,$3A,$2A,$3B,$3C,$0D
,$08,$3F
1610 ;ARROW KEY TABLE
1620 ARRTAB .BYTE $06,$07,$0E,$0F
1630 KEYHOLD .DS 2
1640 MEMHOLD .DS 2
1650 ARFLAG .DS 1
1660 KBFLAG .DS 1
1670 DUMMY
1680 BOTTOM .DS 1
1690 ;INSTALLATION ROUTINE
1700 INIT LDA DOSINI
1710        STA RSTTRAP+1
1720        LDA DOSINI+1
1730        STA RSTTRAP+2
1740        LDA DOSVEC
1750        STA BYEBYE+1
1760        LDA DOSVEC+1
1770        STA BYEBYE+2
1780        LDA MEMLO
1790        STA MEMHOLD
1800        LDA MEMLO+1
1810        STA MEMHOLD+1
1820        LDA VKEYBD
1830        STA KEYHOLD
1840        LDA VKEYBD+1
1850        STA KEYHOLD+1
1860        JMP RSTTRAP+3
1870        *=  INITAD
1880        .WORD INIT
1890        .END
```

first fruits from the practical program contest

WAGE/HOUR PAYMASTER

Article on page 45

LISTING 1




```
XV 10 REM WAGES AND HOURS
ZH 20 REM BY HAL BOYER
HJ 25 REM (c) 1987, ANTIC PUBLISHING
OI 26 REM IMPORTANT: SEE PRINTER CODES IN
   LINES 350 & 370 IF YOU DON'T OWN
SL 27 REM AN EPSON-COMPATIBLE PRINTER!
```

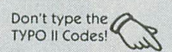
```
PP 30 CLR :GOSUB 1040:GOTO 455
ZW 50 REM GOSUB ROUTINES
IA 70 NBRDGT=6:DECPLS=2:N=BP:GOSUB 110:BP
$=NUMBER$(1,NBRDGT):RETURN
CJ 80 NBRDGT=6:DECPLS=2:N=OTP:GOSUB 110:O
TP$=NUMBER$(1,NBRDGT):RETURN
YT 90 NBRDGT=7:DECPLS=2:N=TP:GOSUB 110:TP
$=NUMBER$(1,NBRDGT):RETURN
ZR 100 NBRDGT=8:DECPLS=2:N=YR:GOSUB 110:Y
R$=NUMBER$(1,NBRDGT):RETURN
AI 110 WORK$=STR$(N)
IB 120 NUMBER$=BLANKS$
PA 130 DECPNT=LEN(WORK$)+1
BU 140 FOR J=1 TO LEN(WORK$)
XC 150 IF WORK$(J,J)="." THEN DECPNT=J:J=
NBRDGT
GN 160 NEXT J
SC 170 NBRLTH=DECPNT+DECPLS
DF 180 NUMBER$(NBRDGT-NBRLTH+1,NBRDGT)=WO
RK$
HC 190 NUMBER$(NBRDGT-DECPLS,NBRDGT-DECPL
S)="."
TZ 200 FOR J=NBRDGT-DECPLS+1 TO NBRDGT
ES 210 IF NUMBER$(J,J)=" " THEN NUMBER$(J
,J)="0"
GG 220 NEXT J
ZE 230 RETURN
JY 240 POSITION 4,22:? "  RETURN=CONTINUE
  ESC=QUIT  "
KG 245 CLOSE #1:OPEN #1,4,0,"K:":GET #1,K
:CLOSE #1:IF K<>155 AND K<>27 THEN 245
DY 250 POSITION 0,22:? CHR$(156):RETURN
MG 260 L$(1,1)="▯":L$(6)=STR$(HRS):L$(11)
="▯":L$(16)="$":L$(17)=BP$
GI 270 L$(28)="▯":L$(33)="$":L$(34)=OTP$:
L$(49)="▯"
BU 280 L$(54)="$":L$(55)=TP$:L$(67)="▯":L
$(70)="$":L$(71)=YR$:L$(80)="▯"
ZQ 290 RETURN
ZU 300 L$(1,1)="▯":L$(2)=STR$(HRS):L$(6)=
"▯":L$(8)=BP$:L$(14)="▯":L$(16)=OTP$:L
$(22)="▯"
GT 310 L$(23)=TP$:L$(30)="▯":L$(31)=YR$:L
$(39)="▯"
ZD 320 RETURN
FB 330 FOR LOUD=14 TO 0 STEP -1:SOUND 0,5
0,10,LOUD:SOUND 1,60,10,LOUD:NEXT LOUD
:RETURN
VJ 340 POSITION 0,5:FOR E=1 TO 20:? "▮";:
NEXT E:RETURN
NZ 350 LPRINT "▮▮":REM PRINTER CODE FOR O
NE LINE OF EXPANDED PRINT
HC 360 LPRINT "                    *WAGES & HOURS
*"
XE 370 LPRINT :LPRINT :LPRINT "▮▮":REM PR
INTER CODE FOR CONDENSED PRINT
ZU 390 LPRINT "NAME: ";EMP$:LPRINT
ZN 400 LPRINT "BASE RATE= $";BASE;"

              52 WKS"
SU 410 LPRINT "▯    HRS    ▯    BASE PAY
 ▯   OVERTIME PAY    ▯   WEEKLY PAY
 ▯ YEARLY PAY ▯"
ZE 420 RETURN
WK 440 REM MAIN PROGRAM INPUT
GO 455 GRAPHICS 0:POKE 709,0:POKE 710,8:P
OKE 712,118
SU 460 POKE 752,0:? "▮":POSITION 11,1:? "
  WAGES & HOURS  "
VY 470 POSITION 11,2:? "================
"
DU 480 TRAP 480:POSITION 5,4:? "Enter Bas
e Rate..";:INPUT BASE
LB 490 IF BASE<=0 OR BASE>20 THEN GOSUB 3
30:POSITION 5,4:? "         Input out of
range ▮▮":GOTO 460
SZ 500 TRAP 500:POSITION 5,6:? "Enter Nam
e..";:INPUT EMP$
TG 510 IF EMP$="" THEN 10
RC 520 IF LEN(EMP$)>12 THEN GOSUB 330:POS
ITION 5,6:? "  Limit Name to 12 Charac
ters  ▮▮▮":GOTO 460
PR 530 TRAP 530:POSITION 3,8:? "Send Outp
ut to Printer or Screen ";:INPUT R$
JC 540 TRAP 40000
VT 550 IF R$="" THEN 10
YG 560 IF R$(1,1)<>"P" AND R$(1,1)<>"S" T
HEN GOSUB 330:GOTO 530
CQ 570 IF R$="S" THEN 890
TG 590 REM PRINT ROUTINE
VX 610 POKE 752,1:POSITION 8,10:? "  PRIN
TING IN PROGRESS  "
NZ 620 TRAP 740
UB 630 GOSUB 350
XE 640 FOR R=1 TO 51
TY 650 IF R=24 OR R=48 THEN FOR LINEFEED=
1 TO 8:LPRINT :NEXT LINEFEED:GOSUB 350
LT 660 HRS=HRS+0.5:POKE 77,0
FJ 670 L$=BLANKS$
XN 680 GOSUB 780
CQ 690 LPRINT PLINE$
LV 700 LPRINT L$
JL 710 NEXT R
AC 720 LPRINT "-------------------------
--------------------------------------
---------------"
UN 730 POKE 752,0:GOSUB 330:GOTO 10
AK 740 POSITION 12,21:? "  Check Printer  "
:GOSUB 240:TRAP 40000:GOTO 10
VR 760 REM FORMULAS AND JUSTIFY
QN 780 BP=BASE*40:BP=INT(BP*100+0.5)/100:
GOSUB 70
JI 790 OT=HRS-40:IF OT<=0 THEN OT=0
IQ 800 OTP=OT*BASE*1.5:OTP=INT(OTP*100+0.
5)/100:GOSUB 80
EA 810 TP=BP+OTP:TP=INT(TP*100+0.5)/100:G
OSUB 90
BX 820 YR=TP*52:YR=INT(YR*100+0.5)/100:GO
SUB 100
KS 830 IF R$(1,1)="P" THEN GOSUB 260:GOTO
 850
RX 840 GOSUB 300
ZO 850 RETURN
KI 870 REM SCREEN DISPLAY ROUTINE
CK 890 ROW=5:COL=0:POKE 752,1:? "▮"
ET 900 POSITION 11,1:? "  WAGES & HOURS  
"
GX 910 POSITION 2,2:? "Name..";EMP$
XD 920 POSITION 22,2:? "Base Rate..";"$";
BASE
PK 930 POSITION 0,4:? "▯HRS BASE PAY   OT
PAY   WEEKLY   YEARLY ▯"
VF 940 FOR L=1 TO 51
VK 950 HRS=HRS+0.5
MP 960 L$=BLANKS$(1,40):GOSUB 780
DF 970 POSITION COL,ROW:? L$;:ROW=ROW+1
GG 975 IF ROW>20 THEN GOSUB 330:GOSUB 240
:IF K=27 THEN POP :GOTO 10
MA 978 IF ROW>20 THEN GOSUB 340:ROW=5
HT 980 NEXT L
BJ 990 POSITION COL,ROW:? " -------------
------------------------"
MY 1000 GOSUB 330:GOSUB 240:POKE 752,0:GO
TO 10
YZ 1020 REM SETUP ROUTINE
DI 1040 DIM L$(80),BP$(20),OTP$(20),TP$(2
0),YR$(20),NUMBER$(80),PLINE$(80),EMP$
(20),SLINE$(40),R$(10),GO$(10)
IE 1050 DIM BLANKS$(80),WORK$(20)
EY 1060 PLINE$="-":PLINE$(80)="-":PLINE$(
2)=PLINE$
FU 1070 PLINE$(1,1)="▯":PLINE$(11,11)="▯"
:PLINE$(28,28)="▯":PLINE$(49,49)="▯":P
LINE$(67,67)="▯":PLINE$(80,80)="▯"
UK 1080 SLINE$="-":SLINE$(39)="-":SLINE$(
2)=SLINE$
UT 1090 SLINE$(1,1)="▯":SLINE$(7,7)="▯":S
LINE$(15,15)="▯":SLINE$(23,23)="▯":SLI
NE$(31,31)="▯":SLINE$(39,39)="▯"
CJ 1100 BLANKS$=" ":BLANKS$(80)=" ":BLANKS$(
2)=BLANKS$
TR 1110 HRS=39.5
KP 1120 POKE 82,0
AK 1130 RETURN
```

RAINBOW SCREEN CUSTOMIZER

Article on page 27

LISTING 1




```
TH 10 REM SCREEN CUSTOMIZER
WQ 20 REM BY JAMES HAGUE
GL 30 REM (c) 1986, ANTIC PUBLISHING
FI 100 GOSUB 10000:POKE 752,1
SM 105 POKE CTRL,0:POKE 709,10
LT 110 POKE 710,0:? CHR$(125)
EV 115 POSITION 11,4:? "GRAPHICS MODE ZER
   0"
DG 120 POSITION 11,5:? "SCREEN  CUSTOMIZE
   R"
FG 125 POSITION 7,7:? "programmed by Jame
   s Hague"
MR 130 POSITION 15,10:? "MAIN MENU"
OO 135 POSITION 9,12:? "█1█ View/Edit Scr
   een"
XW 140 POSITION 9,14:? "█2█ Create Subrou
   tine"
IA 145 POSITION 9,16:? "█3█ Exit Program"
IC 150 POSITION 3,19:? "press the number
   of your selection"
TD 155 GOSUB 500
BY 160 IF CHR$(A)="1" THEN GOSUB 1000:GOT
   O 105
EJ 165 IF CHR$(A)="2" THEN GOSUB 2000:GOT
   O 105
LK 170 IF CHR$(A)="3" THEN GRAPHICS 0:? "
   Your computer is";:END
AN 175 FOR A=15 TO 0 STEP -1:SOUND 0,240,
   10,A:NEXT A:GOTO 155
OZ 499 REM RETURN KEYPRESS IN (A)
SV 500 POKE 764,255:OPEN #1,4,0,"K:"
OC 505 GET #1,A:CLOSE #1:RETURN
XI 999 REM EDIT/VIEW SCREEN
FV 1000 ? CHR$(125)
KI 1005 POSITION 7,5:? "THE FOLLOWING CON
   TROLS ARE"
AD 1010 POSITION 8,6:? "AVAILABLE DURING
   EDITING"
HH 1015 POSITION 7,9:? "select line with
   JOYSTICK"
DF 1020 POSITION 6,11:? "OPTION - charact
   er luminance"
MB 1025 POSITION 6,12:? "SELECT - line lu
   minance"
YH 1030 POSITION 6,13:? "START   - line co
   lor"
HD 1035 POSITION 5,15:? "press TRIGGER to
    stop editing"
GV 1040 POSITION 6,18:? "press any key to
    continue..."
DJ 1045 GOSUB 500:? CHR$(125)
FA 1050 POKE CTRL,1:LINE=11:GOSUB 3000
QC 1055 FOR A=6 TO 23:POSITION 25,A
JM 1060 IF INT(A/2)=A/2 THEN ? "█ABCabc█A
   BCabc";:GOTO 1070
PN 1065 ? "ABCabc█ABCabc█";
FZ 1070 IF A<>23 THEN PRINT
CU 1075 NEXT A
GR 1080 POSITION 2,LINE:? "->"
MY 1085 A=STICK(0)
SY 1090 IF A=14 AND LINE THEN A=LINE-1:GO
   TO 1105
DP 1095 IF A=13 AND LINE<>23 THEN A=LINE+
   1:GOTO 1105
NP 1100 GOTO 1110
OP 1105 POSITION 2,LINE:? "  ";:POSITION
   2,A:? "->";:LINE=A
AL 1110 A=PEEK(53279):IF A<>7 THEN 1125
HU 1115 POKE 20,0
KI 1117 IF PEEK(20)>=5 THEN 1085
SL 1120 IF  NOT STRIG(0) THEN RETURN
RX 1122 GOTO 1117
ZJ 1125 IF A<>3 THEN 1145
OK 1130 B=PEEK(1560+LINE)+2
VR 1135 IF B=16 THEN B=0
UC 1140 POKE 1560+LINE,B:GOTO 1115
SK 1145 B=INT(PEEK(1536+LINE)/16)
YD 1150 C=PEEK(1536+LINE)-16*B
ZH 1155 IF A<>6 THEN 1170
LY 1160 B=B+1:IF B>15 THEN B=0
SO 1165 GOTO 1180
XR 1170 IF A<>5 THEN 1115
PH 1175 C=C+2:IF C>15 THEN C=0
SK 1180 POKE 1536+LINE,B*16+C
RZ 1185 GOTO 1115
NL 1999 REM CREATE SUBROUTINE
FW 2000 ? CHR$(125)
VU 2005 POSITION 11,0:? "SUBROUTINE CREAT
   OR":? :POKE 752,0
SR 2010 ? "Enter the line number that you
    would  like the routine to start at."
GH 2015 TRAP 2015:INPUT LINE:IF LINE<0 OR
    LINE>32700 THEN 2015
DT 2020 ? :? "Enter the line number incre
   ment."
UD 2025 TRAP 2025:INPUT INC:IF INC<1 OR I
   NC<>INT(INC) OR INC>100 THEN 2025
PN 2030 ? :? "Enter the filename to save
   the sub-    routine as.  The 'D:' is op
   tional."
CC 2035 INPUT A$:IF A$="" THEN 2035
FG 2040 IF A$(2,2)=":" AND A$(1,1)<>"D" T
   HEN 2035
ZU 2045 IF A$(2,2)<>":" AND A$(3,3)<>":"
   THEN B$=A$:A$="D:":A$(3)=B$
TI 2050 POKE 752,1:? CHR$(125)
DD 2055 POSITION 6,10:? "Insert a FORMATT
   ED diskette":POSITION 6,12:? "press an
   y key to write file"
NA 2060 GOSUB 500:TRAP 2500:? CHR$(125)
QO 2065 CLOSE #1:OPEN #1,8,0,A$:? CHR$(12
   5)
BK 2070 POSITION 14,10:? "writing file"
UO 2075 ? #1;LINE;"IF PEEK(1584)=104 AND
   PEEK(1585)=173 THEN";LINE+3*INC:LINE=L
   INE+INC
VO 2080 ? #1;LINE;"RESTORE";LINE+3*INC;":
   FOR A=0 TO 47:READ B:POKE 1536+A,B:NEX
   T A":LINE=LINE+INC
VK 2085 ? #1;LINE;"FOR A=0 TO 106:READ B:
   POKE 1584+A,B:NEXT A":LINE=LINE+INC
YI 2090 ? #1;LINE;"A=USR(1584):CTRL=205:R
   ETURN":LINE=LINE+INC
FC 2095 ? #1;LINE;"DATA";PEEK(1536);
RQ 2100 FOR A=1 TO 23:? #1;",";PEEK(1536+
   A);:NEXT A:? #1:LINE=LINE+INC
AL 2105 ? #1;LINE;"DATA";PEEK(1560);
NJ 2110 FOR A=1 TO 23:? #1;",";PEEK(1560+
   A);:NEXT A:? #1:LINE=LINE+INC
CX 2115 FOR A=0 TO 14
BN 2120 ? #1;LINE;"DATA";PEEK(1584+7*A);
EV 2125 FOR B=1 TO 6:? #1;",";PEEK(1584+7
   *A+B);:NEXT B:? #1:LINE=LINE+INC:NEXT
   A
JF 2130 ? #1;LINE;"DATA 104,64"
EH 2135 CLOSE #1:RETURN
YZ 2499 REM ERROR HANDLER
SI 2500 TRAP 2505:CLOSE #1
HA 2505 ? CHR$(125)
AT 2510 POSITION 13,10:? "I/O ERROR ";PEE
   K(195)
IR 2515 POSITION 6,12:? "press any key fo
   r main menu"
IO 2520 GOSUB 500:RETURN
FG 3000 POSITION 6,0:? "┌───────────────────
   ─────────────┐"
```

```
OA 3010 POSITION 6,1:? "▮OPTION=Character
     Luminence▮"
SY 3020 POSITION 6,2:? "▮SELECT=Line Lumi
    nence        ▮"
FY 3030 POSITION 6,3:? "▮START= Line Colo
    r            ▮"
NH 3040 POSITION 6,4:? "▮TRIGGER= Main Me
    nu           ▮"
MY 3050 POSITION 6,5:? "▀━━━━━━━━━━━━━━━━━━
    ━━━━━━━━━━━━▘"
AT 3060 RETURN
XR 9999 REM INITIALIZATION
GG 10000 FOR A=0 TO 23:POKE 1536+A,0:POKE
     1560+A,10:NEXT A
FP 10005 RESTORE 10100
MW 10010 FOR A=0 TO 106:READ B:POKE 1584+
    A,B:NEXT A
TT 10015 CTRL=205:A=USR(1584):DIM A$(20),
    B$(20)
DF 10020 RETURN
NK 10100 DATA 104,173,48,2,133,203,173
QG 10105 DATA 49,2,133,204,160,3,177
ZE 10110 DATA 203,9,128,145,203,160,6
AE 10115 DATA 169,130,145,203,200,192,29
BA 10120 DATA 208,249,169,129,141,0,2
BS 10125 DATA 169,6,141,1,2,160,99
ZZ 10130 DATA 162,6,169,7,133,205,76
MK 10135 DATA 92,228,162,64,165,205,240
IL 10140 DATA 18,173,24,6,141,197,2
PJ 10145 DATA 173,0,6,141,198,2,169
MC 10150 DATA 1,133,206,162,192,142,14
XD 10155 DATA 212,76,98,228,72,138,72
ZT 10160 DATA 166,206,189,24,6,141,10
PX 10165 DATA 212,141,23,208,189,0,6
PI 10170 DATA 141,24,208,230,206,104,170
YL 10175 DATA 104,64
```

punch up your programs with these useful routines

PAGE 6 GRAB-BAG

Article on page 39

LISTING 1

```
HC 10 REM JOYSTICK EXPANDER SUBROUTINE
SJ 20 REM BY MATT LOVELESS AND MIKE EGGER
   S
HA 30 REM (c) 1987, ANTIC PUBLISHING
FL 30000 RESTORE 30100:FOR QQZ=1536 TO 15
   94:READ QQX:POKE QQZ,QQX:RETURN
NA 30100 DATA 173,36,2,141,57,6,173,37,2,
   141,58,6,162,6,160,23
XX 30110 DATA 169,7,32,92,228,104,96,162,
   3,189,120,2,168,185,41,6
DS 30120 DATA 157,120,2,202,16,243,108,57
   ,6,0,0,0,0,0,4,2
IG 30130 DATA 3,0,6,8,7,0,5,1,0,0,0,0,0,0
   ,0,0
```

LISTING 2

```
0100 ; JOYSTICK EXPANDER
0110 ; BY MATT LOVELESS AND MIKE EGGER
S
0120 ; (c) 1987, ANTIC PUBLISHING
0130 ;
0140        *=  $0600    ;Page 6
0150 SETVBV = $E45C   ;Routine to set V
BI vectors
0160 XITVBV = $E462   ;EXIT VBI VECTOR
0170 STICK = $0278    ;beginning of OS'
s joystick values
0180 DVBVLK = $0224   ;Address of defer
red VBI vector
0190 ;
0200 SETUP
0210        LDA DVBVLK  ;Save old vector
0220        STA RETADD
0230        LDA DVBVLK+1
0240        STA RETADD+1
0250        LDX #UPDATE/256 ;High byte of
 VBI vector
0260        LDY #UPDATE&255 ;Low byte
0270        LDA #7        ;Use deferred vec
tor
0280        JSR SETVBV   ;Set VBLANK
0290        PLA          ;* BASIC ONLY *
0300        RTS
0310 ;
0320 UPDATE
0330        LDX #$03     ;4 sticks (0-3)
0340 ;
0350 LOOP
0360        LDA STICK,X ;Get this joystic
k reading...
0370        TAY          ; -- AND --
0380        LDA TABLE,Y ;use it to index
into the table
0390        STA STICK,X ;Store new value
0400        DEX
0410        BPL LOOP     ;If not finished
then branch back
0420 ;
0430        JMP (RETADD)
0440 TABLE
0450        .BYTE 0,0,0,0,0 ;Bad values r
eturn a zero
0460        .BYTE 4         ;RIGHT/BACK
0470        .BYTE 2         ;RIGHT/FORWARD
0480        .BYTE 3         ;RIGHT
0490        .BYTE 0
0500        .BYTE 6         ;LEFT/BACK
0510        .BYTE 8         ;LEFT/FORWARD
0520        .BYTE 7         ;LEFT
0530        .BYTE 0
0540        .BYTE 5         ;BACK
0550        .BYTE 1         ;FORWARD
0560        .BYTE 0         ;CENTERED
0570 ;
0580 RETADD
0590        *=  *+2         ;Return address
0600        .END
```

LISTING 3

```
VH 10 REM CONSOLE KEY SUBROUTINE
SJ 20 REM BY MATT LOVELESS AND MIKE EGGER
   S
HA 30 REM (c) 1987, ANTIC PUBLISHING
WV 31000 RESTORE 31100:FOR XX=1536 TO 153
   6+111:READ XXX:POKE XX,XXX:NEXT XX:RET
   URN
CF 31100 DATA 169,0,141,111,6,104,208,1,9
   6,170,104,104,141,112,6,202
SD 31110 DATA 240,5,104,104,202,208,251,4
   4,112,6,240,30,48,5,169,1
GB 31120 DATA 141,111,6,169,6,133,213,169
   ,112,133,212,162,6,160,75,169
```

continued on next page

```
CV 31140 DATA 133,212,162,228,160,98,169,
   7,76,92,228,173,15,210,41,8
EN 31150 DATA 13,31,208,73,15,174,111,6,2
   08,9,170,41,247,240,13,138
HU 31160 DATA 76,105,6,170,41,247,240,1,1
   38,141,112,6,76,98,228,0
```

LISTING 4

```
0100 ; CONSOLE KEY EXPANDER
0110 ; BY MATT LOVELESS AND MIKE EGGER
S
0120 ; (c) 1987, ANTIC PUBLISHING
0130 ; EQUATES
0140 CONSOL = $D01F   ;CONSOLE BUTTONS
0150 SKSTAT = $D20F   ;SERIAL PORT/KEYB
OARD STATUS
0160 VALRTRN = 212    ;LOCATION TO STOR
E USR RETURN VALUE
0170 SETVBV = $E45C   ;SET VBI VECTOR
0180 SYSVBV = $E45F   ;SYSTEM VBI
0190 XITVBV = $E462   ;EXIT VBI
0200 ;
0210       *=  $0600
0220       LDA #$00
0230       STA FLAG     ;ZERO THE FLAG
0240       PLA
0250       BNE INIT
0260 ;
0270       RTS
0280 INIT
0290       TAX
0300       PLA          ;DISCARD HIGH BYT
E AWAY
0310       PLA          ;GET LOW BYTE
0320       STA BUTTON   ;SAVE IT
0330       DEX          ;COMPENSATE FOR R
EMOVING FIRST ARGUMENT
0340       BEQ GETVBI   ;IF ALL PARAMETER
S ARE OFF THEN BRANCH
0350 LOOP1
0360       PLA          ;REMOVE BAD
0370       PLA          ;VALUES WHICH
0380       DEX          ;MIGHT OCCUR
0390       BNE LOOP1    ;IN THE USR CALL
0400 ;
0410 GETVBI
0420       BIT BUTTON
0430       BEQ VBIOFF   ;OPTION #0
0440 ;
0450       BMI VBION    ;OPTION #128
0460 ;
0470 ;OPTION #1
0480 ;
0490       LDA #$01
0500       STA FLAG
0510 ;
0520 VBION
0530       LDA #BUTTON/256 ;HIGH BYTE FO
R USR RETURN
0540       STA VALRTRN+1
0550       LDA #BUTTON&255 ;LOW BYTE
0560       STA VALRTRN
0570 ;   GRAB VBI
0580       LDX #VBI/256 ;HIGH BYTE
0590       LDY #VBI&255 ;LOW BYTE
0600       LDA #$07     ;DEFERRED VBI
0610       JSR SETVBV
0620       LDA #$00
0630       STA BUTTON
0640       RTS
0650 ;
0660 VBIOFF
0670       LDA #CONSOL/256 ;HIGH BYTE FO
R USR
0680       STA VALRTRN+1
0690       LDA #CONSOL&255 ;LOW BYTE
0700       STA VALRTRN
0710       LDX #XITVBV/256 ;HIGH BYTE
0720       LDY #XITVBV&255 ;LOW BYTE
0730       LDA #$07     ;DEFERRED VBI
0740       JMP SETVBV   ;ITS RTS WILL RET
URN TO CARTRIDGE
0750 ;
0760 ; THE DEFERRED VBI VECTOR POINTS
0770 ; HERE.
0780 ;
0790 VBI
0800       LDA SKSTAT
0810       AND #$08     ;"AND-OUT" ALL BU
T BIT-3 (SHIFT KEY)
0820       ORA CONSOL   ;OR, IN CONSOLE K
EYS
0830       EOR #$0F     ;SWITCH THE LOWER
 NIBBLE.
0840       LDX FLAG
0850       BNE ZERO     ;ARE WE IN LATCHE
D MODE?
0860 ;---YES
0870       TAX          ;COPY A-REG INTO
X-REG
0880       AND #$F7     ;AND OUT SHIFT VA

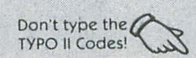
LUE
0890       BEQ EXIT     ;IF NO CONSOLE KE
YS THEN EXIT
0900 ;
0910       TXA          ;ELSE RETURN ORIG
INAL VALUE
0920       JMP STORE
0930 ZERO
0940       TAX
0950       AND #$F7     ;"AND-OUT" SHIFT
VALUE
0960       BEQ STORE    ;IF NO CONSOLE KE
YS THEN STORE A ZERO
0970 ;
0980       TXA          ;OTHERWISE STORE
THE ORIGINAL VALUE
0990 ;
1000 STORE
1010       STA BUTTON
1020 EXIT
1030       JMP XITVBV
1040 ;
1050 FLAG
1060       .BYTE 0
1070 BUTTON
1080       .BYTE 0
1090 ;
1100       .END
```

game of the month

VECTRON

Article on page 16

LISTING 1




```
WV 5 REM VECTRON
EK 6 REM BY HEATH LAWRENCE
GJ 7 REM (c) 1987, ANTIC PUBLISHING
JZ 8 BRK=1:IF PEEK(53279)=5 THEN BRK=0
SF 10 GOSUB 560
DB 20 GOSUB 500:GOTO 120
RU 30 REM MOVE PROJECTILE
TR 40 POKE 77,0:PY=LY:PX=2+34*(PT=2):V=2+
   2*(PT=2):POKE SC+PX+40*PY,10
SP 50 POKE SC+PX+40*PY,0:PY=PY+(V=3)-(V=1
   ):PX=PX+(V=2)-(V=4):PP=PEEK(SC+PX+40*P
   Y):POKE SC+PX+40*PY,10
```

```
CG 60 FOR D=1 TO 10:NEXT D:IF PP=12 OR PP
   =13 THEN GOSUB 340:RETURN
XA 70 ON (PP<>4 AND PP<>5 AND PP<>6 AND P
   P<>7 AND PP<>8 AND PP<>9) GOTO 50:POKE
    710,67:POKE SC+PX+40*PY,83
DF 80 FOR X=1 TO 200 STEP 3:SOUND 1,X,8,1
   0:NEXT X:SOUND 1,0,0,0:POKE 710,35
NC 90 V=1*(PP=6)+2*(PP=4 OR PP=8)+3*(PP=7
   )+4*(PP=5 OR PP=9):S1=S1+(PT=1):S2=S2+
   (PT=2):GOSUB 400
KS 100 NA=NA-(PP<>8 AND PP<>9):ON NA=0 GO
   TO 420:GOSUB 400:GOTO 50
YN 110 REM MAIN ROUTINE
WR 120 LJK=28:GOSUB 610:PT=1:DT=36:GOSUB
   200:LP=8:LX=1:LY=Y1:GOSUB 160:Y1=LY
TE 130 LJK=0:GOSUB 610:PT=2:DT=36:GOSUB 2
   00:LP=9:LX=37:LY=Y2:GOSUB 160:Y2=LY
MK 140 GOTO 120
OG 150 REM MOVE LAUNCHERS
UG 160 TR=STRIG(0)*(PT=1)+STRIG(1)*(PT=2)
   :ON TR=0 GOTO 40:SV=STICK(0)*(PT=1)+ST
   ICK(1)*(PT=2)
JP 170 ON SV<>13 AND SV<>14 GOTO 160:POKE
    SC+LX+40*LY,0:LY=LY+1*(SV=13)-1*(SV=1
   4):LY=LY+1*(LY<1)-1*(LY>19)
UP 180 POKE SC+LX+40*LY,LP:FOR D=1 TO 15:
   NEXT D:GOTO 160
FL 190 REM SET UP A DEFLECTOR
UF 200 POKE SC+1+40*Y1,8:POKE SC+37+40*Y2
   ,9:POSITION 9,0:? "DEFLECTOR TYPE> ";C
   HR$(DT)
WC 210 TR=STRIG(0)*(PT=1)+STRIG(1)*(PT=2)
   :IF TR=0 THEN FOR D=1 TO 200:NEXT D:GO
   TO 250
JX 220 SV=STICK(0)*(PT=1)+STICK(1)*(PT=2)
   :ON SV<>14 AND SV<>13 AND SV<>7 AND SV
   <>11 GOTO 200
UA 230 DT=36*(SV=7)+37*(SV=11)+38*(SV=14)
   +39*(SV=13):GOTO 200
EK 240 REM MOVE CURSOR
EF 250 POSITION 9,0:? ",,,,,,,,,,,,,,,,,,
   ":CX=20:CY=10:CP=PEEK(SC+CX+40*CY):POK
   E SC+CX+40*CY,DT+96
CT 260 TR=STRIG(0)*(PT=1)+STRIG(1)*(PT=2)

QL 270 IF TR=0 AND CP<>0 THEN SOUND 1,42,
   2,12:FOR D=1 TO 50:NEXT D:SOUND 1,0,0,
   0:GOTO 260
QF 280 IF TR=0 AND CP=0 THEN POSITION CX,
   CY:? CHR$(DT):FOR D=1 TO 200:NEXT D:NA
   =NA+1:GOSUB 400:RETURN
TS 290 SV=STICK(0)*(PT=1)+STICK(1)*(PT=2)
   :ON SV=15 GOTO 260:POKE SC+CX+40*CY,CP

CI 300 CX=CX-1*(SV=9 OR SV=10 OR SV=11)+1
   *(SV=5 OR SV=6 OR SV=7)
OL 310 CY=CY-1*(SV=6 OR SV=10 OR SV=14)+1
   *(SV=5 OR SV=9 OR SV=13)
CA 320 CX=CX+1*(CX<3)-1*(CX>35):CY=CY-1*(
   CY>19)+1*(CY<1):CP=PEEK(SC+CX+40*CY):P
   OKE SC+CX+40*CY,DT+96:GOTO 260
EP 330 REM GUTTER BALL
OK 340 ON PP=13 GOTO 370:FOR H=PX TO 0 ST
   EP -1:POKE SC+H+40*PY,11:SOUND 1,H+50,
   10,8:FOR D=1 TO 15:NEXT D
KR 350 FOR H=PX TO 0 STEP -1:POKE SC+H+40
   *PY,11:SOUND 1,H+50,10,8:FOR D=1 TO 15
   :NEXT D:POKE SC+H+40*PY,12
IZ 360 POKE SC+H+40*PY,12:NEXT H:SOUND 1,
   0,0,0:RETURN
IB 370 FOR H=PY TO 1 STEP -1:POKE SC+PX+4
   0*H,14:SOUND 1,H+50,10,8:FOR D=1 TO 15
   :NEXT D:POKE SC+PX+40*H,13:NEXT H
SA 380 SOUND 1,0,0,0:RETURN
ZX 390 REM UPDATE STATS
OW 400 POSITION 9,21:? S1:POSITION 37,21:
   ? S2:POSITION 25,21:? NA;" ":RETURN
HR 410 REM GAME OVER/PLAY AGAIN?
QV 420 GRAPHICS 17:POSITION 5,2:? #6;"gam
   e over":POSITION 5,3:? #6;"=========":
   POSITION 4,5:? #6;"PLAYER 1>";S1
CP 430 POSITION 4,7:? #6;"PLAYER 2>";S2:I
   F S1=S2 THEN POSITION 5,10:? #6;"tie g
   ame!":GOTO 450
PV 440 W=1+(S2>S1):POSITION 3,10:? #6;"pl
   ayer ";W;" wins"
GK 450 POSITION 3,14:? #6;"PRESS <START>"
   :POSITION 3,15:? #6;"TO PLAY AGAIN"
PB 460 FOR Z=1 TO 2:RESTORE 650:FOR X=1 T
   O 8:READ P:READ D:SOUND 1,P,10,8:SOUND
    2,P+10,10,6:FOR DE=1 TO D:NEXT DE
ZQ 470 SOUND 1,0,0,0:SOUND 2,0,0,0:NEXT X
   :NEXT Z
ZO 480 ON PEEK(53279)<>6 GOTO 480:GOTO 20

TZ 490 REM PLAYFIELD
MA 500 GRAPHICS 0:POKE 752,1:POKE 756,ST/
   256:POKE 710,35:SC=PEEK(88)+256*PEEK(8
   9):S1=0:S2=0:Y1=10:Y2=10
VL 505 POKE 77,0:IF BRK THEN POKE 16,112:
   POKE 53774,112
FF 510 COLOR 45:PLOT 0,1:DRAWTO 0,19:PLOT
    38,1:DRAWTO 38,19
ZN 511 COLOR 44:PLOT 0,0:DRAWTO 38,0:PLOT
    0,20:DRAWTO 39,20
CM 520 NA=0:POSITION 0,21:? "PLAYER 1:
   TARGETS LEFT:   PLAYER 2:":Y1=10:Y2=10

JX 530 Y=INT(RND(0)*19)+1:X=INT(RND(0)*33
   )+3:V=INT(RND(0)*4)+4:IF PEEK(SC+X+40*
   Y)<>0 THEN 530:POKE SC+X+40*Y,V
PL 540 POKE SC+X+40*Y,V:NA=NA+1:GOSUB 400
   :ON NA<>50 GOTO 530:RETURN
SE 550 REM REDEFINE
GZ 560 POKE 106,PEEK(740)-5:GRAPHICS 17:P
   OSITION 6,7:? #6;"VECTRON":POSITION 6,
   8:? #6;"-------":POSITION 8,10
VX 565 POKE 77,0:IF BRK THEN POKE 16,112:
   POKE 53774,112
ZM 570 ? #6;"by:":POSITION 3,13:? #6;"hea
   th lawrence":POSITION 2,17:? #6;"PRESS
    TRIGGER...":ST=(PEEK(106)+1)*256
NA 575 MOVE=ADR("hh[illegible]")
EI 576 REM X=USR(MOVE,FROM_ADDRESS,TO_ADD
   RESS,AMOUNT)
DY 580 X=USR(MOVE,57344,ST,1024)
VD 581 Q=ADR("[illegible]")
IR 585 X=USR(MOVE,Q,ST+32,88)
SL 590 IF (STRIG(0) AND STRIG(1)) THEN 59
   0
ZC 600 RETURN
KW 610 FOR K=(LJK=28)*28 TO (LJK=0)*28 ST
   EP (2*(LJK=0)-1)
KZ 615 SOUND 2,(-2.179*K+121),14,14
NG 620 POSITION K,22:? " ======== ";:SOUN
   D 2,0,0,0:NEXT K
VD 630 POKE 77,0:IF BRK THEN POKE 16,112:
   POKE 53774,112
ZX 635 RETURN
ZT 640 REM TUNE DATA
BJ 650 DATA 62,20,58,20,54,20,48,30,48,30
   ,54,20,58,20,62,50
```

LISTING 2

```
KC 10 REM VECTRON LISTING TWO
MI 20 REM BY HEATH LAWRENCE
ZZ 25 REM (CREATES LINES 575 & 581 FOR VE
   CTRON.BAS)
XB 30 REM (c) 1985,1986,1987 ANTIC PUBLIS
   HING
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "     ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")     "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "TOO
```

continued on next page

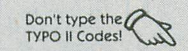
```
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
IR 1000 DATA 165
JY 1010 DATA 0530550530320770790860690610
   65068082040034104104133241104133240104
   133213104133212104133239104
PK 1020 DATA 1332381600001772401452122302
   12208002230213230240208002230241198238
   208234198239016230096034041
KI 1030 DATA 1550530560490320810610650680
   82040034024012006255255006012024024048
   096255255096048024024060126
NS 1040 DATA 2191530240240240240240241532
   19126060024159255131251251131255159249
   255193223223193255249000024
SU 1050 DATA 0601261260600240002550240601
   26126060024255255000000000000000000255
   129129129129129129129129129
ZV 1060 DATA 1531892552551891531290340411
   55
```

lesson 12: graphics modes

NEW OWNERS COLUMN

Article on page 42

LISTING 1




```
FP 10 REM THE NEW OWNERS COLUMN #12
EB 20 REM BY DAVE PLOTKIN
XW 25 REM (DEMO PROGRAM BY CHARLES JACKSO
   N)
GL 30 REM (c) 1986, ANTIC PUBLISHING
CE 35 POKE 704,50:POKE 705,180:POKE 706,3
   0:POKE 707,146
SW 40 GRAPHICS 1+16
JS 50 POSITION 5,4:? #6;"ThIS Is"
RI 60 POSITION 3,8:? #6;"GrAPHiCS OnE"
SO 65 POSITION 2,15:? #6;"PrESS aNY KeY";
   CHR$(129):POKE 764,255
ND 70 TEMP=PEEK(711):POKE 711,PEEK(710):X
   =SIN(4)
OY 80 POKE (710),PEEK(709):X=SIN(4):POKE
   709,PEEK(708):X=SIN(4)
QF 90 POKE 708,TEMP:X=SIN(4):IF PEEK(764)
   =255 THEN 70
SG 100 POKE 764,255:GRAPHICS 2+16
YB 110 POSITION 4,4:? #6;"GrAPHiCS 2"
FE 120 GOSUB 1000:GRAPHICS 2+32:? CHR$(12
   5);"(HERE'S THE TEXT WINDOW)"
OY 130 ? :? " -> Press any key <- "
CB 140 GOSUB 1000:GRAPHICS 2+16+32:IF PEE
   K(764)=255 THEN 120
WC 145 REM NOW LET'S SEE GR. 3-11
YI 150 GMODE=3:WIDTH=39:HEIGHT=19:MAXKLR=
   4:GOSUB 800
AZ 160 GMODE=4:WIDTH=79:HEIGHT=39:MAXKLR=
   2:GOSUB 800
EM 170 GMODE=5:WIDTH=79:HEIGHT=39:MAXKLR=
   4:GOSUB 800
PG 180 GMODE=6:WIDTH=159:HEIGHT=79:MAXKLR
   =2:GOSUB 800
SV 190 GMODE=7:WIDTH=159:HEIGHT=79:MAXKLR
   =4:GOSUB 800
QT 200 GMODE=8:WIDTH=319:HEIGHT=159:MAXKL
   R=2:GOSUB 800
HA 210 GMODE=9:WIDTH=79:HEIGHT=191:MAXKLR
   =16:GOSUB 800
CT 220 GMODE=10:WIDTH=79:HEIGHT=191:MAXKL
   R=9:GOSUB 800
XZ 230 GMODE=11:WIDTH=79:HEIGHT=191:MAXKL
   R=16:GOSUB 800
NZ 240 END
IA 799 REM RANDOMLY SELECT TWO SINE WAVES
    AND DRAW A LINE BETWEEN CORRESPONDING
    POINTS
CJ 800 GRAPHICS GMODE:K=1:DEG :IF GMODE>8
    THEN K=8
AA 810 COLOR K:IF GMODE>8 THEN 820
XM 812 ? "GRAPHICS ";GMODE;"   (";WIDTH+
   1;" x ";HEIGHT+1;", ";MAXKLR;
DC 815 ? " colors)":? :? "         Drawing i
   n COLOR ";K
ZW 820 FACT=INT(RND(0)*180):POKE 764,255
AV 830 FACT2=INT(RND(0)*180)
UF 840 FOR X=(HEIGHT*-1) TO HEIGHT STEP 2
   +INT(RND(0)*GMODE)
ZM 850 Y1=ABS(SIN(FACT+X)*WIDTH)
KV 860 Y2=ABS(SIN(FACT2+X)*WIDTH)
QH 870 PLOT Y1,ABS(X):DRAWTO Y2,HEIGHT-AB
   S(X)
FG 880 NEXT X:SOUND 0,75,14,14:GOSUB 1000
   :SOUND 0,0,0,0:POKE 77,0
ZO 890 IF GMODE<9 THEN ? "Press [SELECT]
    to change GR. modes.":? :? "Press [ST
   ART]  to continue."
YD 900 ON (PEEK(53279)) GOTO 900,900,900,
   900,920,910,900
TV 910 K=INT(RND(0)*MAXKLR):IF MAXKLR=16
   AND K/2<>INT(K/2) THEN 910
PI 915 GOTO 810
ZJ 920 RETURN
PR 999 END
LG 1000 POKE 20,0:REM GENERIC TIMER ROUTI
   NE
LO 1010 IF PEEK(20)<50 THEN 1010
AF 1020 RETURN
```

ST PUZZLER

Article on page 63

LISTING 1

```
1000  '
1010  ' ST PUZZLER
1020  ' (C) 1987 Antic Publishing
1030  ' ver 120286
1040  ' Written by David Bohlke
1050  '
1060  '----------------------------
1070  MAIN:
1080   randomize 0
1090   gosub SETCOLOR
1100   TRUE=1: FALSE=0
1110   WRONG=0
1120   TIMER=0
1130   RIGHT=0
1140   fullw 2
1150   clearw 2
1160   for J=1 to 60
1170      X=rnd*84+210
1180      Y=rnd*70+90
1190      while abs( XA-YA )<300
1200           XA=rnd*3600
1210           YA=rnd*3600
1220      wend
1230      XR=rnd*9+7
1240      YR=rnd*9+7
1250      color 1,rnd*15+1,1,7,2
1260      pellipse X, Y, XR, YR, XA, YA
1270   next J
1280   color 1,1,1
1290   linef 220, 100, 283, 100
1300   linef 283, 100, 283, 147
1310   linef 283, 147, 220, 147
1320   linef 220, 147, 220, 100
1330   color 1,0,0
1340   for X=180 to 219
1350      linef X,60,X,180
1360      linef X+104,60,X+104,180
1370   next X
1380   for Y=70 to 99
1390      linef 160,Y,310,Y
1400      linef 160,Y+78,310,Y+78
1410   next Y
1420   gosub GRID
1430   color 12
1440   gotoxy 23,7
1450   print" ST Puzzler"
1460   for I =1 to 8
1470      for J=1 to 6
1480           B( I ,J )=0
1490      next J
1500   next I
1510  '
1520  '-------------------------
1530  PUZZLE:
1540   gosub MAKE.SCORE
1550   M$=" Selecting piece     SCORE "
1560   M$=M$+str$( SCORE )+" "
1570   gosub TITLE
1580   R=int( rnd*8 )+1
1590   C=int( rnd*6 )+1
1600   if B( R, C )=1 then goto PUZZLE
1610   NX=240
1620   NY=20
1630   gosub PLOTBIG
1640   gosub MAKE.SCORE
1650   M$=" Click to grid   SCORE "
1660   M$=M$+str$( SCORE )+" "
1670   gosub TITLE
1680  '
1690  MLOOP:
1700   gosub MOUSE
1710   if B<>1 then TIMER=TIMER+1: goto MLOOP
1720   A=int(( X-10 )/24)+1
1730   B=int(( Y-30 )/24)+1
1740   if A<1 or A>8 or B<1 or B>8 then goto MLOOP
1750   if A=R and B=C then goto GOT.ONE
1760   WRONG=WRONG+1
1770   gosub MAKE.SCORE
1780   M$=" Incorrect          SCORE "
1790   M$=M$+str$( SCORE )+" "
1800   gosub TITLE
1810   sound 1, 8, 4, 2, 99
1820   sound 1, 0, 0, 0, 0
1830  goto PUZZLE
1840  '
1850  '----------------------
1860  GOT.ONE:
1870   RIGHT=RIGHT+1
1880   B( R, C )=1
1890   gosub MAKE.SCORE
1900   M$=" CORRECT "+str$( RIGHT )
1910   M$=M$+" -"+str$( WRONG )
1920   M$=M$+"   SCORE "+str$( SCORE )
1930   M$=M$+" "
1940   gosub TITLE
1950   NX=R*24-14
1960   NY=C*24-14
1970   gosub PLOTBIG
1980   if RIGHT<48 then goto PUZZLE
1990  '
2000   gotoxy 2, 0
2010   color 15
2020  B.LOOP:
2030   gosub mouse
2040   if b<>1 then goto B.LOOP
2050  goto MAIN
2060  '
2070  '-------------------------
2080  GRID:
2090   color 1, 1, 1
2100   for X=10 to 202 step 24
2110      linef X,10,X,154
2120      linef 10,X,202,X
2130   next X
2140  return
2150  '
2160  '-------------------------
2170  PLOTBIG:
2180   A=R*8+212
2190   B=C*8+92
2200   for I=0 to 7
2210      for J=0 to 7
2220           X=I+A
2230           Y=B+J
2240           gosub LOCATE
2250           color 1,LC,LC
2260           X1=I*3+NX
2270           Y1=J*3+NY
2280           X2=I*3+NX+2
2290           linef X1,Y1,X2,Y1
2300           linef X1,Y1+1,X2,Y1+1
2310           linef X1,Y1+2,X2,Y1+2
2320      next J
2330      if NX<210 then sound 1,8,I+4,5,0
2340      if NX>=210 then sound 1,6,10-I,3,0
2350   next I
2360   sound 1,0,0,0,0
2370  return
2380  '
2390  '-----------------
2400  MAKE.SCORE:
2410   SCORE=( RIGHT-WRONG )*100
2420   SCORE=SCORE-int( TIMER/10 )
2430  return
2440  '
2450  '-----------------
2460  TITLE:
2470   M$=M$+chr$( 0 )
2480   A#=GB
2490   GINTIN=peek( A#+8 )
2500   poke GINTIN,peek( SYSTAB+8 )
2510   poke GINTIN+2,2
2520   V#=GINTIN+4
2530   poke V#,varptr( M$ )
2540   gemsys( 105 )
2550  return
2560  '
2570  '------------------
2580  MOUSE:
2590   poke CONTRL,124
2600   poke CONTRL+2,0
```

continued on next page

```
2610    poke CONTRL+6,0
2620    vdisys( 0 )
2630    X=peek( PTSOUT )
2640    Y=peek( PTSOUT+2 )
2650    B=peek( INTOUT )
2660   return
2670   '
2680   '------------------
2690   SETCOLOR:
2700    restore COLOR.DATUM
2710    for I=0 to 1
2720       read A
2730       R=int( A/100 )
2740       G=int(( A-R*100 )/10 )
2750       B=A-R*100-G*10
2760       poke CONTRL,14
2770       poke CONTRL+2,0
2780       poke CONTRL+6,4
2790       poke INTIN,I
2800       poke INTIN+2,R*140
2810       poke INTIN+4,G*140
2820       poke INTIN+6,B*140
2830       vdisys( 0 )
2840    next I
2850    A#=GB
2860    GINTIN=peek( A#+8 )
2870    poke GINTIN,3
2880    gemsys( 78 )
2890   return
2900   '
2910   COLOR.DATUM:
2920    data 030,777
2930   '
2940   '----------------------
2950   LOCATE:
2960    poke CONTRL,105
2970    poke CONTRL+2,1
2980    poke CONTRL+6,0
2990    poke PTSIN,X+1
3000    poke PTSIN+2,y+22
3010    vdisys( 0 )
3020    LC=peek( INTOUT+2 )
3030   return
```

TYPO ST codes for ST PUZZLER! Don't type these.

1000 :00F2	1210 :03D2	1420 :040D	1630 :04FB	1840 :00F4	2050 :03A5	2260 :0307	2470 :03F9	2680 :0421	2890 :0373
1010 :03CC	1220 :0273	1430 :034A	1640 :05B3	1850 :04D3	2060 :00EF	2270 :030B	2480 :01F8	2690 :0376	2900 :00F2
1020 :087B	1230 :03B6	1440 :043B	1650 :07A9	1860 :0303	2070 :0582	2280 :0367	2490 :0592	2700 :06F5	2910 :042E
1030 :034B	1240 :03B8	1450 :06DE	1660 :05D0	1870 :0465	2080 :022A	2290 :0586	2500 :089A	2710 :03DB	2920 :03CB
1040 :08F1	1250 :0692	1460 :03E4	1670 :0470	1880 :0293	2090 :03D5	2300 :0636	2510 :04FB	2720 :02A8	2930 :00F5
1050 :00ED	1260 :083C	1470 :03E4	1680 :00F6	1890 :05BA	2100 :0699	2310 :0639	2520 :03A7	2730 :03F8	2940 :0501
1060 :05DA	1270 :02D3	1480 :028C	1690 :0291	1900 :0745	2110 :0501	2320 :02D0	2530 :067F	2740 :0549	2950 :02C2
1070 :0227	1280 :03D5	1490 :02D7	1700 :0471	1910 :060C	2120 :04FC	2330 :090A	2540 :044A	2750 :03C7	2960 :0514
1080 :04C2	1290 :05B1	1500 :02CE	1710 :0B49	1920 :074B	2130 :02DD	2340 :0975	2550 :036C	2760 :04E1	2970 :050D
1090 :0555	1300 :05BD	1510 :00EE	1720 :050C	1930 :025B	2140 :0367	2350 :02D2	2560 :00F4	2770 :050A	2980 :0511
1100 :0482	1310 :05C0	1520 :0554	1730 :0511	1940 :0470	2150 :00EF	2360 :0495	2570 :041F	2780 :0513	2990 :04F1
1110 :02BD	1320 :05AD	1530 :02ED	1740 :0BF9	1950 :0326	2160 :0582	2370 :036C	2580 :0292	2790 :0478	3000 :0591
1120 :02B2	1330 :03CF	1540 :05B2	1750 :09C3	1960 :0319	2170 :0315	2380 :00F4	2590 :0514	2800 :0595	3010 :03E7
1130 :02B0	1340 :04BC	1550 :08DD	1760 :0481	1970 :0502	2180 :02BD	2390 :03F2	2600 :0502	2810 :058D	3020 :05C7
1140 :0322	1350 :050A	1560 :05CF	1770 :05B7	1980 :0919	2190 :0286	2400 :03C8	2610 :0507	2820 :058B	3030 :0366
1150 :0377	1360 :068B	1570 :046F	1780 :06E7	1990 :00FA	2200 :03DB	2410 :06C4	2620 :03ED	2830 :03F0	
1160 :0410	1370 :02E2	1580 :04FB	1790 :05D4	2000 :03FA	2210 :03DD	2420 :07D7	2630 :0545	2840 :02D6	
1170 :03F6	1380 :0465	1590 :04EB	1800 :046B	2010 :0348	2220 :0210	2430 :0369	2640 :05A4	2850 :01F9	
1180 :03C9	1390 :053C	1600 :08AA	1810 :04E4	2020 :02A8	2230 :0214	2440 :00F1	2650 :0525	2860 :0593	
1190 :069A	1400 :0668	1610 :0241	1820 :0495	2030 :050E	2240 :04A0	2450 :03EF	2660 :036E	2870 :04A8	
1200 :03D0	1410 :02DE	1620 :020F	1830 :046F	2040 :07B4	2250 :048F	2460 :0288	2670 :00F6	2880 :042A	

/T RESOURCE

BASIC ALERT

Article on page 68

LISTING 1

```
1000   ' ST ALERT BOXES
1010   ' (C) 1987 Antic Publishing
1020   ' Ver 120286
1030   ' Written by Dr. Ron Schaefer
1040   '
1050   '---------------------------
1060    gosub INITAES
1070    fullw 2
1080    clearw 2
1090   '
1100   '---------------------------
1110    while CHOICE<3
1120       TYPE$="3"
1130       TEXT$="Choose a box|and click the mouse."
1140       BUTTON$="One|Two|Quit"
1150       DEFAULT.BUTTON=1
1160       gosub FORM.ALERT
1170       if CHOICE=1 then ?"You chose number 1"
1180       if CHOICE=2 then ?"You chose number 2"
1190       if CHOICE=3 then ?"Good bye"
1200    wend
1210   end
1220   '
1230   '------------------------------
1240   FORM.ALERT:
1250    N#=ADDRIN
1260    poke GINTIN, DEFAULT.BUTTON
1270    ALERT$="["+TYPE$+"]"
1280    ALERT$=ALERT$+"["+TEXT$+"]"
1290    ALERT$=ALERT$+"["+BUTTON$+"]"
1300    ALERT$=ALERT$+chr$(0)+CHR$(0)
1310    poke N#, varptr( ALERT$ )
1320    gemsys( 52 )
1330    CHOICE=peek( GINTOUT )
1340   return
1350   '
1360   '---------------------------------
1370   INITAES:
1380    A#=GB
1390    CONTROL=peek( A# )
1400    GLOBAL=peek( A#+4 )
1410    GINTIN=peek( A#+8 )
1420    GINTOUT=peek( A#+12 )
1430    ADDRIN=peek( A#+16 )
1440    ADDROUT=peek( A#+20 )
1450   return
```

TYPO ST codes for BASIC ALERT! Don't type these.

										1400 :056C
										1410 :0589
1000 :0492	1040 :00EC	1080 :0379	1120 :02DE	1160 :05C2	1200 :0271	1240 :03DB	1280 :076A	1320 :0416	1360 :06EB	1420 :0616
1010 :087A	1050 :0552	1090 :00F1	1130 :0E07	1170 :0BEC	1210 :01FB	1250 :0328	1290 :0802	1330 :06CF	1370 :0312	1430 :05A3
1020 :034A	1060 :04F4	1100 :054E	1140 :083E	1180 :0BEF	1220 :00EC	1260 :087C	1300 :07F3	1340 :0368	1380 :01F6	1440 :0600
1030 :09E7	1070 :0324	1110 :04F6	1150 :0544	1190 :08B0	1230 :0633	1270 :059F	1310 :079D	1350 :00F0	1390 :0585	1450 :036A

ATTN: PASCAL USERS

MODULA-2



FOR ATARI 520ST

the successor to Pascal

- FULL interface to GEM DOS, AES and VDI
- Smart linker for greatly reduced code size
- Full Screen Editor linked to compiler locates and identifies all errors.
- True native code implementation (Not UCSD p-Code or M-code)
- Sophisticated multi-pass compiler allows forward references and code optimization
- Desktop automates Edit/Compile/Link cycle
- FileSystem, RealInOut, LongInOut, InOut, Strings, Storage, Terminal
- Streams, MathLib0 and all standard modules
- Directory search paths
- Supports real numbers and transcendental functions ie. sin, cos, tan, arctan, exp, ln, log, power, sqrt
- 3d graphics and multi-tasking demos
- CODE statement for assembly code
- 370-page manual
- Installs on Hard disk and RAM disk
- No royalties or copy protection
- Phone and network customer support provided

Pascal and Modula-2 source code are nearly identical. Modula-2 should be thought of as an enhanced superset of Pascal. Professor Niklaus Wirth (the creator of Pascal) designed Modula-2 to replace Pascal.

Added features of Modula-2 not found in Pascal

- CASE has an ELSE and may contain subranges
- Programs may be broken up into Modules for separate compilation
- Machine level interface
  - Bit-wise operators
  - Direct port and Memory access
  - Absolute addressing
  - Interrupt structure
- Dynamic strings that may be any size
- Multi-tasking is supported
- Procedure variables
- Module version control
- Programmer definable scope of objects
- Open array parameters (VAR r: ARRAY OF REALS;)
- Elegant type transfer functions

Ramdisk Benchmarks (secs)	Compile	Link	Execute	Optomized Size
Sieve of Eratosthenes:	6.2	4.3	3.5	2600 bytes
Float	6.4	4.8	8.3	4844 bytes
Calc	5.5	4.2	3.3	2878 bytes
Null program	5.1	3.2	—	2370 bytes

```
MODULE  Sieve;
CONST   Size = 8190;
TYPE    FlagRange = [0..Size];
        FlagSet = SET OF FlagRange;
VAR     Flags: FlagSet;
        i:     FlagRange;
        Prime, k, Count, Iter: CARDINAL;
BEGIN   (*$S-,$R-,$A+ *)
  FOR Iter:= 1 TO 10 DO
    Count:= 0;
    Flags:= FlagSet(); (* empty set *)
    FOR i:= 0 TO Size DO
      IF (i IN Flags) THEN
        Prime:= (i * 2) + 3; k:= i + Prime:
        WHILE k <= Size DO
          INCL (Flags, k);
          k:= k + Prime;
        END;
        Count:= Count + 1:
      END;
    END;
  END;
END Sieve.
```

```
MODULE Float;
FROM MathLib0 IMPORT sin, ln, exp,
                     sqrt, arctan;
VAR x,y: REAL; i: CARDINAL;
BEGIN (*$T-,$A-,$S-*)
  x:= 1.0;
  FOR i:= 1 TO 1000 DO
    y:= sin (x); y:= ln (x); y:= exp (x);
    y:= sqrt (x); y:= arctan (x);
    x:= x + 0.01;
  END;
END float.
```

```
MODULE calc;
VAR a,b,c; REAL; n, i: CARDINAL;
BEGIN (*$T-,$A-,$S-*)
  n:= 5000;
  a:= 2.71828; b:= 3.14159; c:= 1.0;
  FOR i:= I TO n DO
    c:= c*a; c:= c*b; c:= c/a; c:= c/b;
  END;
END calc.
```

Product History

The TDI Modula-2 compiler has been running on the Pinnacle supermicro (Aug. '84), Amiga (Jan. '86) and will soon appear on the Macintosh and UNIX in the 4th Qtr. '86.

Regular Version $79.95 Developer's Version $149.95 Commercial Version $299.95

The regular version contains all the features listed above. The developer's version supplies an extra diskette containing a symbol file decoder – link and load file disassemblers – a source file cross referencer – symbolic debugger – high level Windows library Module – Ramdisk and Print Spooler source files – Resource Compiler. The commercial version contains all of the Atari module source files.

Other Modula-2 Products

Kermit	– Contains full source plus $15 connect time to Compuserve.	$29.95
Examples	– Many Modula-2 example programs to show advanced programming techniques	$24.95
GRID	– Sophisticated multi-key file access method with over 30 procedures to access variable length records.	$49.95

TDI SOFTWARE, INC.

10410 Markison Road ■ Dallas, Texas 75238 ■ (214) 340-4942
Telex: 888442 Compuserve Number: 75026,1331

CIRCLE 050 ON READER SERVICE CARD

Form 1040 Department of the Treasury U.S. Individual
For the year January 1-December 31, 1986, or
Use IRS label. Other-wise, please print or type. Your first name and initial
Present home addre
City, town or
Presidential Election Cam
Filing

The Tax ADVANTAGE™

FOR PEACE OF MIND AT TAX TIME

Income Tax Preparation for Individuals and Sole Proprietors

The Tax Advantage takes you through Form 1040 and the other most common tax forms quickly and easily. It does all the calculations for you. On Form 1040, the program actually calculates your tax after every entry, instantly updating your screen as you make changes and corrections. It will increase your speed, make the work easier, and reduce the likelihood of error. You can also make lists and supporting statements by itemizing a line and print all the forms and statements out to submit them to the IRS.

- Includes tax law updates that affect your 1986 taxes
- Forms 1040, 2106, 2441, 4562, 6251
- Schedules A, B, C, D, E, G, SE, W
- IRS approved printouts
- Supports over 235 printers by 50 manufacturers
- On Best-seller Lists since 1982

Federal and California State Income Tax versions available for Apple®, Atari®, Commodore®, and IBM® computers and compatibles.

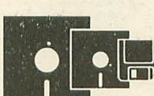
2210 Wilshire Blvd.
Suite 875
Santa Monica, CA 90403
(213) 459-9748

DOUBLE EAGLE **Software, Inc.**

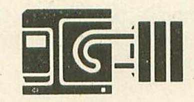
CIRCLE 017 ON READER SERVICE CARD

The Tax Advantage is a trademark of Continental Software/Arrays, Inc., licensed to Double Eagle Software, Inc. Previously published by Continental Software.

Fast and Facilitating.



DISKETTE DUPLICATION
All formats. Quality tested. From 25 to 1000 duplicated in 24 hours—25,000 per week.



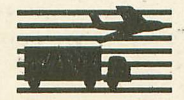
COPY PROTECTION
NoClone copy protection. Each application uniquely encripted.



DOCUMENTATION PRODUCTION
Complete coordination service. Text printing. Custom sleeves, labels and tabs.



PACKAGING ASSEMBLY
Full turnkey service. All types of binders. Shrink wrapping and shipping cartons.



DELIVERY FULFILLMENT
Computerized inventory. Pick and ship to your customer list. National delivery service.

disclone™

DISKETTE DUPLICATION AND PRODUCTION
1050 North Fifth Street, San Jose, California 95112
(408) 947-1161 OUTSIDE CA: 1-800-826-4296

CIRCLE 018 ON READER SERVICE CARD

CLOCK CALENDAR
For ATARI ST

The Navarone TIMEKEEPER™ module plugs into the cartridge port on the Atari 520/1040 ST computers. A non-copy protected program disk is supplied that contains all the programs needed to install the TIMEKEEPER™ and operate as either an accessory or from an AUTO folder.

TIMEKEEPER™ is no doubt the most valuable and crucial add-on component of your Atari ST computer system. Never again will you have to enter the time and date each time you turn on your computer. When you turn off your computer (or even unplug the TIMEKEEPER™ module), it keeps on ticking, maintaining accurate time so you won't ever have to worry about setting the time and date again. With TIMEKEEPER,™ you get an automatic record of time and date of every file you create or update, right in the directory.

FEATURES:
- Extender slot allows use of other cartridge products.
- Alarm software provided.
- Removable battery (no need to un-solder to replace batteries.)
- Clock display window.

The TIMEKEEPER™ comes complete, ready to use, no assembly required. You don't have to take your computer apart to use it.

TO ORDER: Contact your local dealer or call:
800-654-2821 *in California*
800-624-6545 *Nationwide*

PRICE: $49[95]




NAVARONE INDUSTRIES, INC.
21109 LONGEWAY ROAD, SUITE C
SONORA, CA 95370 • (209) 533-8349
TLX:WWI 650-230-9046

CIRCLE 037 ON READER SERVICE CARD

You'll get a kick out of Thai Boxing for the Atari ST.

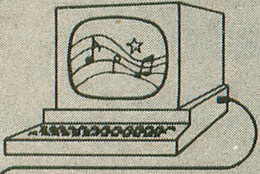
Examine Artworx' expanding list of ST software:

THAI BOXING brings oriental kick boxing to the ST with stunning 3-D graphics and fast action. **Only $19.95**
BRIDGE 5.0 Improved bidding and play! Many new features and refinements. **Only $34.95**
STRIP POKER is *the* classic computer program. Play against Suzi and Melissa; the more you win, the more they take off! **Only $39.95**
HOLE IN ONE GOLF Plays like the real thing and includes an easy-to-use Editor for designing your own golf course. **Only $19.95**
COMPUBRIDGE is Artworx' bridge tutorial, utilizing 10 chapters covering all aspects of the game. **Only $29.95**
PEGGAMMON is a new and innovative approach to backgammon. Play against the computer or with a friend in the two-player mode. **Only $17.95**
MAILLIST handles medium to large sized lists. It zip code sorts, alphabetizes, selects by keyword, prints labels, and more. **Only $19.95**
BAKER STREET DETECTIVE brings you back to 1893 London with mysteries to solve just like Sherlock Holmes. **Only $17.95**



Artworx Software Co., Inc., 1844 Penfield Road, Penfield, N.Y. 14526 (716) 385-6120 · (800) 828-6573

CIRCLE 006 ON READER SERVICE CARD




Dr. T's MUSIC SOFTWARE

THE MOST POWERFUL MIDI MUSIC SOFTWARE IS NOW AVAILABLE FOR THE MOST POWERFUL HOME COMPUTER!

Dr. T's Music Software is currently developing a complete line of MIDI music software taking FULL advantage of the power and features of the ATARI 520/1040ST computers.

NOW AVAILABLE . . .

KEYBOARD CONTROLLED SEQUENCER $195
Full MIDI parameter/note editing, cut and paste editing, 48 tracks, 126 sequences, 50,000+ notes 520ST, 130,000+ notes 1040ST, MIDI song pointer, and MUCH MORE!

MIDI RECORDING STUDIO $39
6-Tracks, full cut and paste editing, data compatible with Keyboard Controlled Sequencer, and MORE! Full credit on trade-up to KCS.

CZ PATCH $99
Graphic display of envelopes, full edit/librarian features, point and click, 240 sounds on the disk!

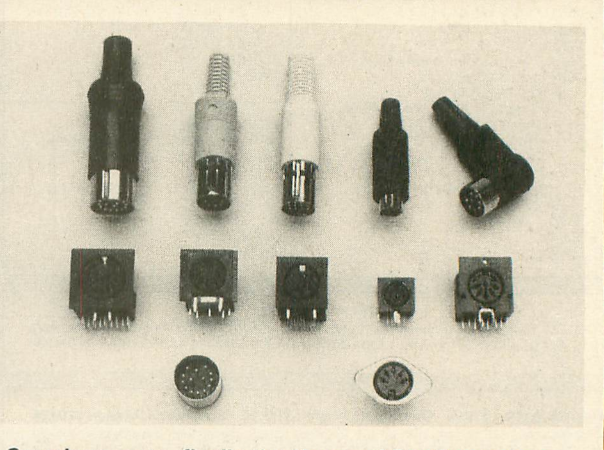
COMING SOON . . .
A full line of sound editors, music score printing/editing utilities, algorithmic composition tools, and more! Call or write for details.

LIMITED ONLY BY YOUR IMAGINATION . . .

Dr. T's MUSIC SOFTWARE, 66 Louise Rd., Chestnut Hill, MA 02167 **(617) 244-6954**

CIRCLE 019 ON READER SERVICE CARD

CIRCULAR DIN CONNECTORS



Search no more, finally the House of Din Connectors is here. We have them all. Whether Metal Bodies or Plastic Bodies. Suitable for all Computers, Keyboards, Mice, Peripherals, Instruments, Medical and Measuring Equipments. From 2 to 14 contacts. Panel, P.C. Board or Cable Mounting. All types from one source. Call today for your sample.



ALPHA PRODUCTS, INC.
5740 Corsa Ave., #104
Westlake Village, CA 91362
Telephone: (818) 889-9304
TLX: 65-9210 – FAX (818) 706-8986

CIRCLE 004 ON READER SERVICE CARD

TEVEX = Software, Service, & Savings

SSI

SSI	LIST PRICE	OUR PRICE
Battalion Commander	$40	$27
Battle/Antietam	$50	$33
Battle for Normandy	$40	$27
Broadsides	$40	$27
Carrier Force	$60	$40
Colonial Conquest	$40	$27
Computer Ambush	$60	$40
Computer Quarterback	$40	$27
Cosmic Balance	$40	$27
Field of Fire	$40	$27
50 Mission Crush	$40	$27
Gemstone Warrior	$20	$15
Gettysburg	$60	$40
Imperium Galactum	$40	$27
Kampfgruppe	$60	$40
Kamp. Scen. Disk	$20	$15
Knights of the Desert	$40	$27
Mech Brigade	$60	$40
Nam	$40	$27
Operation Market Garden	$50	$33
Panzer Grenadier	$40	$27
Questron	$50	$33
Rails West	$40	$27
Reforger 88	$60	$40
Six Gun Shootout	$40	$27
U.S.A.A.F.	$60	$40
War in Russia	$80	$53
Wargame Constr *NEW*	$30	$20
Warship *NEW*	$60	$40
Wizard's Crown	$40	$27

BRØDERBUND

BRØDERBUND	LIST PRICE	OUR PRICE
Brimstone (2 drives)	$40	$27
Champ. Lode Runner	$35	$23
Essex (2 drives)	$40	$27
Lode Runner	$35	$23
Lode Runner's Rescue	$30	$20
Mindwheel (2 drives)	$40	$27
Print Shop	$45	$30
Print Shop Companion	$35	$23
PS Grap. Lib. 1,2,3	$25	$17

EPYX

EPYX	LIST PRICE	OUR PRICE
Ballblazer	$15	$12
Eidolon	$15	$12
Koronis Rift	$15	$12
Rescue on Fractalus	$15	$12
Summer Games	$40	$27
Temple Apshai Trilogy	$40	$27
World Karate Champ.	$30	$20
EPYX Joystick *NEW*	$20	$15

MICROPROSE

MICROPROSE	LIST PRICE	OUR PRICE
Conflict in Vietnam	$40	$27
Crusade in Europe	$40	$27
Decision in the Desert	$40	$27
F-15	$35	$23
Kennedy Approach	$25	$17
Silent Service	$35	$23
Solo Flight	$25	$17
Top Gunner	$25	$17

ATARI ST

ATARI ST	LIST PRICE	OUR PRICE
Auto Duel *NEW*	$50	$33
A Mind/Voyaging	$45	$30
Amazon	$50	$33
Ballyhoo	$40	$27
Black Cauldron	$40	$27
Borrowed Time	$50	$33
Brataccus	$50	$33
Champ. Wrestling NEW	$40	$27
Chessmaster 2000 NEW	$40	$27
Fahrenheit 451	$50	$33
Flight Simulator II	$50	$33
Hacker	$45	$30
Hacker II	$50	$33
Hitchhiker's Guide	$40	$27
Kings Quest II	$50	$33
Kings Quest III *NEW*	$50	$33
Leader Board	$45	$30
Leather Goddesses	$40	$27
Little Computer People	$50	$33
Mean 18	$45	$30
Mindshadow	$50	$33
Moon Mist *NEW*	$40	$27
Music Studio	$60	$40
Nine Princes of Amber	$50	$33
Ogre *NEW*	$40	$27
Pawn	$45	$30
Phantasie	$40	$27
Rogue	$40	$27
S.D.I. *NEW*	$50	$33
Silent Service	$40	$27
Skyfox *NEW*	$47	$32
Space Quest *NEW*	$50	$33
Star Fleet I	$55	$37
Star Glider	$45	$30
Sundog	$40	$27
Sword of Kadash	$20	$15
Tass Times *NEW*	$50	$33
Temple Trilogy	$40	$27
Trinity	$40	$27
2 on 2 Basketball NEW	$45	$30
Ultima II	$60	$40
Ultima III	$60	$40
Universe II	$70	$46
Winter Games	$40	$27
World Games	$40	$27

INFOCOM

INFOCOM	LIST PRICE	OUR PRICE
Ballyhoo	$40	$27
Deadline	$45	$30
Enchanter	$35	$23
Fooblitzky	$40	$27
Hitchhikers Guide	$35	$23
Leather Goddesses	$35	$23
Moonmist *NEW*	$35	$23
Planetfall	$35	$23
Sorcerer	$40	$27
Spellbreaker	$45	$30
Suspect	$40	$27
Wishbringer	$35	$23
Zork I	$35	$23
Zork II or III	$40	$27
Invisiclues	$8	$6

ELEC. ARTS

ELEC. ARTS	LIST PRICE	OUR PRICE
Age of Adventure *NEW*	$15	$12
Archon	$15	$12
Archon II: Adept	$33	$22
Chessmaster 2000	$40	$27
Lords of Conquest *NEW*	$33	$22
Mail Order Monsters *NEW*	$15	$12
Movie Maker	$33	$22
M.U.L.E.	$15	$12
Ogre *NEW*	$40	$27
One on One	$15	$12
Racing Destr. Set	$15	$12
Touchdown Football	$15	$12
Ultima III-Origin Sys.	$50	$33
Ultima IV-Origin Sys.	$60	$40

ETC.

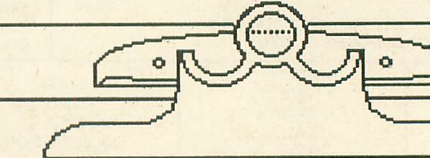
ETC.	LIST PRICE	OUR PRICE
Alternate Reality	$40	$27
Fight Night	$30	$20
Flight Simulator II	$50	$33
Ghostbusters	$30	$20
Hacker	$25	$17
Halley Project	$30	$20
Hardball	$30	$20
Leader Board	$40	$27
Mindshadow (64k)	$25	$17
Mercenary	$30	$20
Micro League Baseball	$40	$27
MLB 1986 Team Disk	$20	$15
Music Studio	$35	$23
Never Ending Story	$30	$20
Spy vs Spy I & II	$15	$12
Star Fleet I	$50	$33
Triple Pack *NEW*	$20	$15
Universe	$90	$70

Tevex Blank Disks
Box of 10, 5 1/4" DSDD only **$12**

TEVEX
INCORPORATED

1710 Wilwat Drive, Suite E
Norcross, GA. 30093
404-441-3045

BEST SELECTION - We have carefully selected the best titles from the most challenging software available.
CALL TOLL-FREE - Call us to place an order or just to ask a question. Every call is always welcome on our 800 line.
SAME DAY SHIPPING - We ship every order the same day it's placed. Just call before 3:30 pm and we'll ship your order UPS.
DISCOUNT PRICES - Save up to 1/3 off the retail price when you buy from Tevex. Why pay more for the same software?
FRIENDLY, KNOWLEDGEABLE STAFF - We are always available to answer your questions and keep you up to date on new & upcoming games.



COMING SOON

Auto Duel - Origin
Battlegroup - SSI
Dungeon - Datasoft
Guderian - Avalon Hill
Hollywood Hijinx - Infocom
Pawn - Firebird
Phantasie - SSI
221-B Baker Street - Datasoft

FOR THE ST
Balance of Power - MD
Breach - Omnitrend
Defender of the Crown
Phantasie II

CALL TOLL-FREE 1-800-554-1162

SAME DAY SHIPPING *
WRITE FOR FREE CATALOG





Open 9-8 Mon. - Fri. 10-4 Sat.

Georgia residents call 404-441-3045. ORDERING AND TERMS: C.O.D. orders welcome. When ordering by phone use VISA or MASTERCARD. When ordering by mail send personal check or money order. Include phone number. SHIPPING: Add $2.50 for shipping and handling charge. Georgia residents add 4% sales tax. Shipping for Canadian orders is $4.00 or 5% of order. APO & FPO orders add $3.00 or 5% of order. Shipping for all other foriegn orders is $10.00 or 15% of order. * On all orders before 3:30 pm. All prices subject to change.

ADVERTISERS LIST

Be sure to mention ANTIC when contacting these advertisers—all of whom support the Atari Computer.

	READER SERVICE NO.	PAGE NO.
ADVANCED LANGUAGE	003	104
ALPHA PRODUCTS	004	100
ALPHA SYSTEMS	007	56
AMERICAN T.V.	005	46
ANTIC		29,35,66,105
AVALON HILL	066	19
BLACK PATCH SYSTEMS	010	18
COMPUTER CREATIONS	011	68
COMPUTER MAIL ORDER	012	20/21
COMPUTER SOFTWARE SERVICE	013	38
COVOX	014	72
C.C.S./APEX	015	76
DORSETT EDUCATIONAL SYSTEMS	060	104
DOUBLE EAGLE	017	99
ELECTRONIC ONE	028	7
ELECTRONICAL SOFTWARE	022	104
GAMES COMPUTERS PLAY	024	41
GEISCO		44
HAPPY COMPUTER	025	10
MAD SCIENTIST	040	105
MAGNA SYSTEMS		46
MICROCUBE	034	25
MICROTYME	035	80
PROTECTO	039	54,55
S & S WHOLESALERS	041	14,15
SOFTWARE DISCOUNTERS	043	53
S.S.I.	046	3
SUBLOGIC	047	22
TEVEX	052	102
UNLIMITED SOFTWARE	054	105
WHITE HOUSE COMPUTER	074	2
WHITE LION	056	46
ZOBIAN CONTROLS	080	11

ST ADVERTISERS LIST

	READER SERVICE NO.	PAGE NO.
ABACUS	001,002	8,67
ACCUSOFT	061	104
ARTWORX	006	100
BATTERIES, INC.	067	BACK COVER
BECKMEYER DEV.	008	104
BIG FOOT	009	25
CENTRAL POINT SOFTWARE	016	12
DISCLONE	018	99
DR. T'S	019	100
ECHO DATA SERVICE		100
FRED BUCH	023	25
I.S.D. MARKETING	026	26
LOGICAL DESIGN WORKS	028	12
LYCO	029,030	4,74,75
MEGAMAX	031	38
METACOMCO	032	38
MICHTRON	033	82
MILES COMPUTING	048	107
MISSION SOFT	036	46
NAVARONE INDUSTRIES	037	100
PROGRESSIVE COMPUTER APPS.	038	72
SENSE SOFTWARE	042	105
SHELBOURNE	059	65
SPENCER ORGANIZATION	044	79
ST PLUS	064	104
STARSOFT	045	73
STARWISE	063	104
SUPRA	068	34
SZABO	049	104
TDI	050	99
TECHTRONIX/LC TECHNOLOGY	051	7
TIMEWORKS	053	13
XLENT	065	60

This list is provided as a courtesy to our advertisers. ANTIC does not guarantee accuracy or comprehensiveness.

ADVERTISING SALES

Phoebe Thompson Associates
Phoebe Thompson
408-356-4994

The Pattis Group
Jill Krotich Burrow
312-679-1100



Advertising Sales Director
John Taggart
Antic Magazine
544 Second St.
San Francisco, CA 94107
(415) 957-0886

Garland Associates
Peter Hardy
617-749-5852

Phoebe Thompson Associates
15640 Gardenia Way
Los Gatos, CA 95030
PHOEBE THOMPSON
408-356-4994

The Pattis Group
4761 W. Touhy Ave.
Lincolnwood, IL 60646
JILL KROTICH BURROW
312-679-1100

Garland Associates
10 Industrial Park Rd.
Hingham, MA 02043
PETER HARDY
617-749-5852

Address all advertising materials to:
Katherine Murphy
Advertising Production Coordinator
Antic Magazine
544 Second Street
San Francisco, CA 94107



Professional Solutions:

NEW VERSION

MT C-SHELL *The Only Unix-Like Multi-tasking, Multiuser TOS Compatible Operating System. Has Electronic Mail, Print Spooling, supports Networking! Too much to mention here. Runs TOS programs. Two User System* **Only $129.95!** *Additional Unix-style tools* **$24.95** *On-line manual system* **$19.95** *Make utility* **$34.95** *Ask about networking!*

MICRO C-SHELL *the full featured shell that started it all. New improved version. Now works with MWC! Still* **Only $49.95**

NEW!

HARD DISK ACCELERATOR *make your ST's disk up to three times faster.* **$39.95**

VSH Manager *a GEM interface to be used with MT C-Shell. Run a visual C-Shell in one window and a GEM application in another simultaneously.* **$34.95**

Ansi Term *professional terminal emulator for the ST. Using ANSI X3.64 protocol, with automatic file transfer and printing. XMODEM, ASCII text, Kermit, and Compuserve 'B' protocols available.* **$24.95**

Hard Disk ToolKit *a stand-alone hard disk utility package. Includes a fast, reliable back-up program and other useful functions.* **$29.95**

Beckemeyer Development Tools
478 Santa Clara Avenue Oakland, CA.94610 415.452.1129

CIRCLE 008 ON READER SERVICE CARD

STplus tm

P.O. 1197, Berkeley, CA, 94701

Save money from an authorized 1040 ST dealer! We are totally committed to the new Atari line and we support everything we sell!

GOOD PRICES & EXCELLENT SUPPORT!

1040 ST COLOR = $959 MONO = $799
520 ST COLOR = 799 – MONO = $639
1 MEG FOR $145, DUAL DSDD add $300
Atari 20 mb hard disk $639, 60 mb for $1715
Epson DX – 10 = $249, Epson LX – 80 = $239
Canon PJ – 1080A Color Printer $239

Mark Williams 'C'	**$125**	**Megamax**	**$160**
Hisoft Devpac	**$56**	**Fortran 77**	**$104.95**
Stargilder	**$31.50**	**Psi Chess**	**$42.00**
Flight Simulator	**$35.00**	**Thai Boxing**	**$14.00**
Dungeonmaster	**$27.00**	**Time Bandit**	**$27.00**

****WE CARRY ALL TITLES & HARDWARE****

Microsoft Write	**$90.00**	**Thunder**	**$27.95**
Make It Move	**$25.00**	**Fontwriter**	**$27.95**
Ansigraph VT102	**$55.95**	**Flash**	**$27.95**
GRAPHIC ARTIST	**$140**	**MAGIC SAC +**	**$120**

Nat'l(800)433 – 6222 Calif(800)874 – 4789
S.F. Bay area(415) 849 – 8717 AmexVisaMC

CIRCLE 064 ON READER SERVICE CARD

How about a 8 7/8" by 6 3/8" 128 color (11" diagonal, proportionally correct) WYSIWYG screen dump...in less than 18 minutes printing time from your B&W printer??

COLOR WITHOUT THE COST!

— YEMACYB —
COLOR PRINTING SYSTEM

This product allows you to make color printout without having to purchase a color printer.

Easily print your pad, pen, painter, or digitizer graphics files in up to 128 simultaneous colors. Mix your own colors for thousands of combinations. YEMACYB has features that allow you to create large colorful graphics with text overlays, or you can modify and print pictures from your existing graphics library. 1,966,080 pixels of print resolution produces a large, crisp, razor sharp, artwork quality, color printout, suitable for framing. (Image slightly smaller on PROWRITER.)

YEMACYB works with the ATARI 8-bit computer. You will also need a disk drive, four colored printer ribbons, a graphics capable printer interface, plus one of the supported printers with tractor feed. The YEMACYB system supports the C.ITOH PROWRITER, STAR SG-10, and any EPSON MX/80 graphics compatible printers. (1200XL will need Translator.)

Also available are YEMACYB PRINTING PACKS for the C.ITOH PROWRITER, SG-10 (GEMINI 10X), and EPSON MX/80 printers. Each printing pack has four ribbons (one each: yellow, red, blue, black) and the YEMACYB software. While ordinary ribbons will work with YEMACYB, the brilliant colors in our ribbon pack will yield the full spectrum of vibrant hues capable of being produced by the YEMACYB system.

To order YEMACYB (software only), send $21.95 ($19.95 + $2.00 S&H).

To order a YEMACYB PRINTING PACK (software and 4 ribbons), send $39.95 ($36.95 + $3.00 S&H) for SG-10 or 10X spools. Send $47.95 ($43.95+$4.00 S&H) for MX/80 or PROWRITER cartridges.

If ordering ribbons, please be sure to specify the printer type. Mail your check or money order to:




ELECTRONICAL SOFTWARE
P.O. BOX 8035 - ROCHESTER, MI 48063
(Michigan residents please add 4% sales tax)
To Make Your Printer COME ALIVE, What You'll Need Is YEMACYB!!

CIRCLE 022 ON READER SERVICE CARD

Advan BASIC

"spectacular....an expanded BASIC with powerful new commands...brilliant work ...send away for your copy today. You will not regret it." Apr86 ANTIC magazine

"great...easy to use...I heartily recommend the package" Aug86 ANALOG magazine

*FAST: Compiles. Short programs run upto 20 times faster than in ATARI BASIC. Long programs upto 100 times faster.
*POWERFUL: Real, integer, and string arrays and variables. Strings are not dimensioned. IF THEN ELSE, REPEAT, WHILE, CASE, and multi-line IF commands. Functions and subroutines with up to 4 arguments. 8 PM and 3 sound commands.
*ONLY $39.95. Includes prog. which converts many ATARI BASIC prog. to ADVAN form. Needs 1 disk drive & 800XL/XE/48K 800. VISA/MC accepted. Shipping $3.95 in N.A.

ADVAN LANGUAGE DESIGNS
Box 159 Baldwin, KS 66006
(913)-594-3420

CIRCLE 003 ON READER SERVICE CARD

AccuSoft® Presents
ST BASIC PIZZAZZ
Without the Price!

You've invested in a powerful machine — the Atari ST. But you find it's tough writing fancy programs.

Now you can express your creativity . . . Show off the impressive ST graphics capabilities . . . Without having to learn a complex new language!!!

ST Tools I — Over 60 easy-to-use Basic subroutines for GEM File Selector and Dialog Boxes, VDI Graphics, and more . . . without having to type any more PEEKS or POKES!!! Includes softcopy documentation . . . **$12.95**

ST Demos I — Six compiled programs (music, games, graphics, utilities) plus the original ST Basic source code to modify or use in your own programs. Plus ST Basic tips. A great learning tool **$12.95**

Both the above disks — A perfect couple **$19.95**

ST Basic Developer's Kit — Create programs quickly with the Atari Basic Interpreter, then compile them as is to get programs that run directly from the desktop *5-40 times faster than normal!!!* Package includes LDW ST Basic Compiler, manual, plus **both** ST Tools I and ST Demos I. *Everything you need . . . . only* **$79.95**

ST Public Domain Disks — $5
(write for free Catalog and ST Tips)
Free Shipping on all orders
Check or Money Order Only
Ohio Residents add 5.5% tax

AccuSoft®
Dept. 5C
P.O. Box 02214
Columbus, OH 43202

CIRCLE 061 ON READER SERVICE CARD

LET'S GAMBLE!
STARWISE SOFTWARE PRESENTS
ULTIMATE CRAPS

- $2,000 Limit! Double Odds!!
- Learn to play like the pro's!
- Programmed by a Crap Dealer.
- Over three years in the making.

U.C. was modeled after the game of Bank Craps (as played on the Las Vegas Strip), and has proven invaluable during gambling consultations! Now **YOU** can become an expert at Craps, **BEFORE** you visit the casino! Help screens explain each bet. Complete Data analysis at the end of each 'hand'. Documentation includes; complete rules, 5 betting systems, 6 Place bet methods, Smart Money Management. Craps glossary, and much more! THIS IS NO GAMBLE!!

ULTIMATE CRAPS $24.00
CASINO KENO $10.00
Get both for $29.00

For 800/XL/XE, Disk. • NV residents add tax. Commercial quality programs wanted. Contact:

Starwise Software
4535 W. Sahara Ave., Suite 105-327
Las Vegas, NV 89102 • (702) 362-2004

CIRCLE 063 ON READER SERVICE CARD



CIRCLE 049 ON READER SERVICE CARD

832 Half-Hour AV Programs for Atari
TEACH AND TALK

Pre-school to adult. Program series on Reading, Writing, ESL, Business Communication, Spelling, Arithmetic, Fractions, Measurements, Algebra, Geometry, Statistics, Vocational, Technical, Electronics, Office, Health Careers, Safety, Physics, Economics, Accounting, Supervision, Psychology, Philosophy, Sociology, History, etc.

Album of 16 programs on eight cassettes, $59.90+2.50. Master Cartridge free with order. Cassette recorder free with two albums. Just mention this ad!

Call orders toll-free (1-800-654-3871) or write for free catalog. COD/Visa/MC.

DORSETT EDUCATIONAL SYSTEMS, INC.
P.O. Box 1226, Norman, OK 73070

CIRCLE 060 ON READER SERVICE CARD



SEND FOR DETAILS

DISK-OF-THE-MONTH CLUB *
P.O. BOX 116, FAIR LAWN, N.J. 07410-0116

NAME ______
STREET ADDRESS ______
CITY ______ STATE ______ ZIP ______

* DIV. of UNLIMITED SOFTWARE INC

CIRCLE 054 ON READER SERVICE CARD

DBSENSE

is a text-based relational database program for Atari ST computers. Color is used, but not needed.

Creating DBs is very simple. There's only one data type (ASCII) and column widths aren't specified.

From keyboard: create, manipulate, display DBs.

Write programs in the DBSENSE language tailored to your own personal or business needs.

Programs can take the place of a spreadsheet.

Programs can load needed DBs from a disk, use data from them to perform calculation (16 digits), create new DBs, fill in preprinted forms, create bills or other documents for a list of clients, print address labels for same clients, etc.

DBSENSE has a word processor with which reports can be merged into letters or other documents.

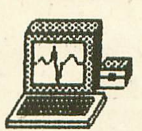
A program can use the word processor and data from any number of DBs to customize a letter to a list of clients.

Sense Software
105 Iron Mountain Road
Warwick, N.Y. 10990

Price $49.95
No charge cards
914 986 2711

CIRCLE 042 ON READER SERVICE CARD

CARDIAC ARREST!



for 800/XL/XE or ST

$69

with 48-page manual

The ultimate adventure — because it's real. "Cardiac Arrest!" is an incredible cardiac resuscitation simulator — so stimulating, it's like a medical adventure game for doctors, nurses, or paramedics. Or for someone who wants to play doctor.

You interpret the on-screen EKG and vital signs, type your order (in regular English), and see what happens. You won't believe this simulator runs on a home computer. Over three years in development by an emergency physician.

Other ACLS Software:

EKG Teaching $29
Protocol Learning $29
CardioQuiz $19

Mad Scientist Software
2063 N. 820 W., Pleasant Grove, UT 84062
801-785-3028

CIRCLE 062 ON READER SERVICE CARD

ANTIC CLASSIFIEDS

SOFTWARE

ATARI 8-BIT & ST best PD software for your Atari. 150+ disks total to choose from! Only $5.00 ea. Catalog with SASE. Specify ST or 8-Bit PLEASE! Gator-Soft, Box 1215, Gainesville, FL 32602.

Missing back issues of ANTIC?
Write us at ANTIC, 544 Second Street S.F., 94107 or see THE CATALOG in this issue.

Public Domain Library of Software
See THE CATALOG in this issue.

The New Testaments of The Bible on Disk
Send S.A.S.E. for information to:
Computers As Tutors
325 May Ct. Mt. Zion, IL 62549

An Ad In Antic Reaches More Than 100,000 Serious Atari Users.

Classifieds

BUY-SELL-TRADE-SWAP IN THE CLASSIES

Antic Classifieds

Classified Manager, Antic–The Atari Resource
544 Second Street, San Francisco, CA 94107
Telephone (415) 957-0886

Name ______ Company ______
Address ______ Phone ______
City/State/Zip ______
MasterCharge/Visa Number ______ Expiration Date ______
Signature ______ Issue(s) Ad To Appear ______

Enclosed is my payment for $ ______.

NON-COMMERCIAL RATE: $15.00 per line—three (3) line minimum.
COMMERCIAL RATE: $25.00 per line—four (4) line minimum.
BOLDFACE: Add $7.50 per line for boldface words or add $40.00 for the entire ad set in boldface (any number of lines).
TERMS: Prepayment is required. Check, Money Order, Visa or MasterCard is accepted. Make check payable to Antic Publishing.
FORMS: Ads are subject to publisher's approval and **must be TYPED.** One line equals 40 letters and spaces between words. Please underline words to be set in boldface.
GENERAL INFORMATION: Advertisers using Post Office Box numbers in their ads must supply permanent address and telephone numbers. Ad will appear in the next available issue after receipt.
DEADLINE: 90 days prior to cover date (e.g., July 1987 closes April 1, 1987—July issue on sale June 1, 1987).
Clip this coupon, attach to typewritten copy and send with remittance to address above.
HANDWRITTEN COPY WILL NOT BE ACCEPTED.

BY BILL MARQUARDT, ANTIC TECHNICAL ASSISTANT

Pinout Master Charts

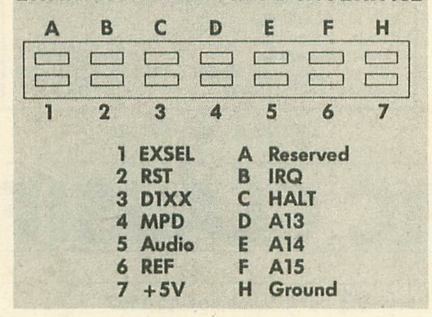
This month's Tech Tips column brings together pinout diagrams for all connector sockets on 8-bit Atari computers. (ST owners have a full set of pinout diagrams in the manuals provided with their computers, particularly the ST BASIC manual.)

If you've ever built a hardware project or needed to troubleshoot your computer, you know the value of correct pinout diagrams. But it is often hard to find these diagrams for the 8-bit Atari. And even if you do find a diagram, it is not always clear whether the pinout is facing forward or backward.

Here you have all the 8-bit connector diagrams collected in one place. And they are all displayed in the same point of view—as if you are looking directly into the socket from the outside of the computer.

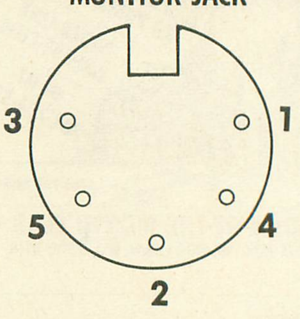
Which connectors you'll find socketed on your Atari depends on the model. Connector name labels may also vary slightly from model to model.

ENHANCED CARTRIDGE INTERFACE



1	EXSEL	A	Reserved
2	RST	B	IRQ
3	D1XX	C	HALT
4	MPD	D	A13
5	Audio	E	A14
6	REF	F	A15
7	+5V	H	Ground

MONITOR JACK



1 Composite luminance
2 Ground
3 Audio out
4 Composite video
5 Composite chroma (not on XL/XE)

CARTRIDGE SLOT

A B C D E F H J K L M N P R S

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1	S4	A	RD4
2	A3	B	Ground
3	A2	C	A4
4	A1	D	A5
5	A0	E	A6
6	D4	F	A7
7	D5	H	A8
8	D2	J	A9
9	D1	K	A12
10	D0	L	D3
11	D6	M	D7
12	S5	N	A11
13	+5V	P	A10
14	RD5	R	R/W
15	CCTL	S	B02

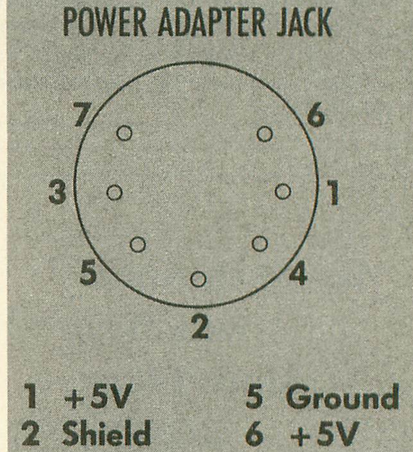
SERIAL PORT

2 4 6 8 10 12

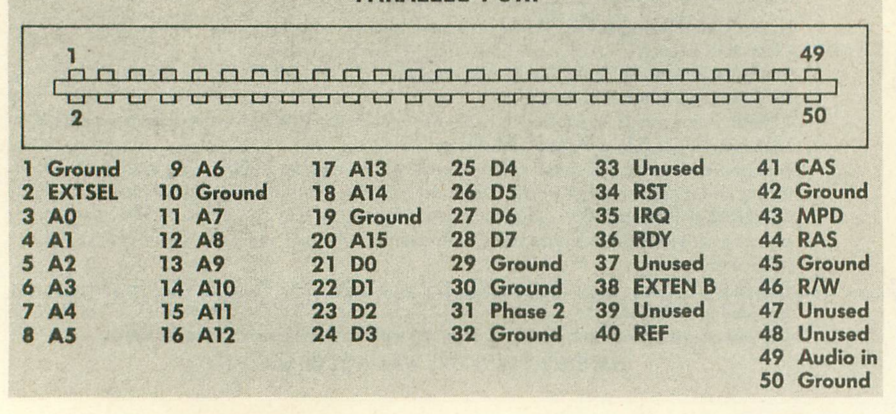
1 3 5 7 9 11 13

1 Clock input	8 Motor control
2 Clock output	9 Proceed
3 Data input	10 +5V / Ready
4 Ground	11 Audio input
Data output	12 +12V
6 Ground	13 Interrupt
7 Command	

POWER ADAPTER JACK



PARALLEL PORT



1 Ground	9 A6	17 A13	25 D4	33 Unused	41 CAS
2 EXTSEL	10 Ground	18 A14	26 D5	34 RST	42 Ground
3 A0	11 A7	19 Ground	27 D6	35 IRQ	43 MPD
4 A1	12 A8	20 A15	28 D7	36 RDY	44 RAS
5 A2	13 A9	21 D0	29 Ground	37 Unused	45 Ground
6 A3	14 A10	22 D1	30 Ground	38 EXTEN B	46 R/W
7 A4	15 A11	23 D2	31 Phase 2	39 Unused	47 Unused
8 A5	16 A12	24 D3	32 Ground	40 REF	48 Unused
					49 Audio in
					50 Ground

CONTROLLER JACK

1 2 3 4 5

6 7 8 9

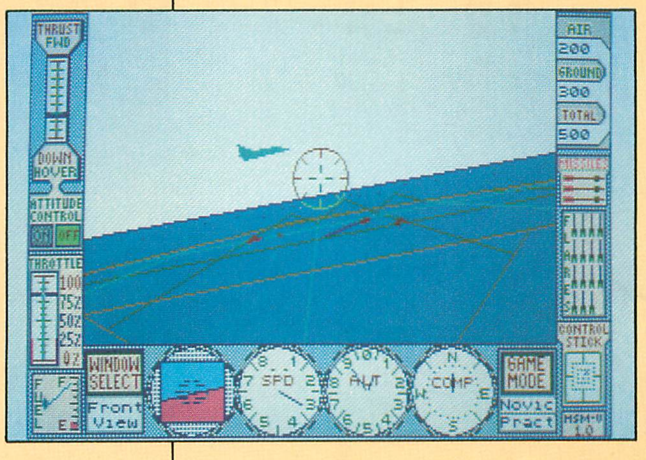
1 Forward	6 Trigger
2 Back	7 +5V
3 Left	8 Ground
4 Right	9 Paddle A
5 Paddle B	

One of the World's Most Popular Games on the Macintosh

NOW AVAILABLE ON ATARI ST!

HARRIER STRIKE MISSION

There's this island off the coast somewhere...the enemy's headquarters. Your weapon? The Harrier Jump Jet, one of the world's most sophisticated technological marvels, which combines the ability to take off and land vertically like a helicopter with the speed and punch of the latest in modern jet armament. Your mission, should you decide to accept it, is to pilot your Harrier from the deck of an aircraft carrier, take out enemy aircraft, locate and destroy enemy headquarters and fuel depot, and safely land back on the deck.



Simple, isn't it? Hardly! Facing you will be some of the world's nastiest enemy fighter planes launching heat seeking missiles. The good news is that you have three Sidewinder missiles, two 30mm Aden cannon pods and the ability to maneuver like no other jet in history! The bad news? You have only one plane to fight off five enemy aircraft.

Now wipe that sweat off your brow, don your helmet and gloves, strap yourself into your seat and GOOD LUCK! 'Nuff said, it's CLOBBERIN' time! Harrier Strike Mission–a 3-Dimensional Flight Combat Simulator for your Atari ST. The first in a series of new projective 3-D simulations from MILES COMPUTING, Inc.





Miles ahead of the pack.

Miles Computing, Inc.

7741 Alabama Avenue, Suite 2
Canoga Park, CA 91304 • (818) 341-1411

CIRCLE 048 ON READER SERVICE CARD

The Market's Moving... to the Isgur Portfolio System!™

THE ISGUR PORTFOLIO SYSTEM IS:

WINNER OF "THE EDITORS CHOICE AWARD" – PC MAGAZINE

Software that helps you manage any combination of investment portfolios more efficiently: stocks, bonds, currencies, options, commodities, mutual funds, and MORE. An easy, quick to learn alternative to the massive "professional" systems, but with all of their features and flexibility.

"Easy to learn, easy to use, ...gives serious investors many of the tools used by professionals. A four-disk rating!" – **INFOWORLD**

HOW IT WORKS:

IPS Automatically Updates your Portfolios: using the latest data from your preferred on-line service. The built in integrated telecommunications module is pre-set to receive Dow Jones, CompuServe, The Source and InfoGlobe.

Timely Alerts with "Memo" Function: automatically advises you of option expiry dates, critical short term/long term changes, or your own personal deadlines.

"A very complete investment package... a lot of thought has gone into the extras." – **PERSONAL COMPUTING**

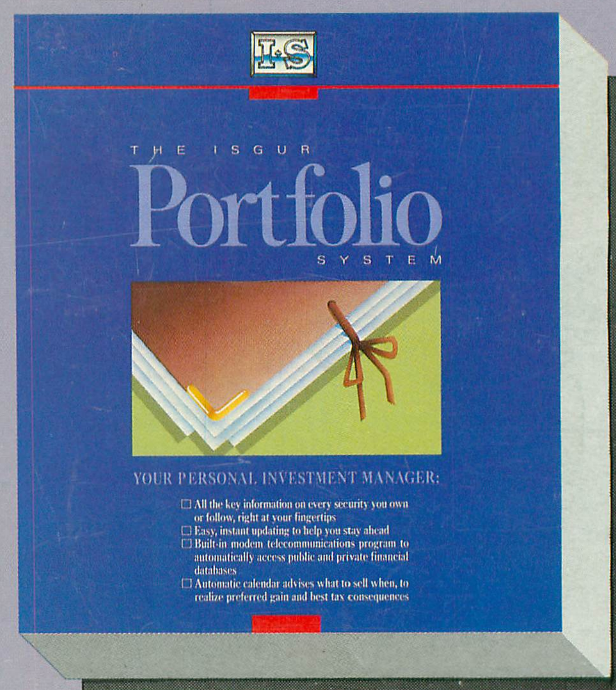
Flexible and Intuitive: display, sort, compile, manipulate and print-out your investment data exactly as you want it. By portfolio, by security, or using a whole menu of helpful criteria.

Powerful Analytical Features Include: • "Raise Money" • "Splits/Dividends" • "Cash and Margins" • "Suppose or What If" Functions and many more. The combined result? More profitable investment decisions, with less work.

"It's dangerous to look at any software package and say, 'This is the one', but this one comes very close... a rich variety of information formats and reportting options." – **COMPUTERIZED INVESTING**

The Isgur Portfolio System. The investment management program designed by Lee Isgur, Senior Vice-President of PaineWebber, New York, and one of the world's leading financial analysts.

"The developers obviously consulted with a stockbroker who knows his business." – **PC MAGAZINE**



"Unanimous praise... extremely powerful, yet easy to use!"

– FORTUNE MAGAZINE'S 1987 INVESTORS GUIDE

The Isgur Portfolio System is Only $249.95 on IBM PC and Compatibles or $199.95* on The MACINTOSH and Atari ST.*

Try The Isgur Portfolio System for 30 days, on a no-risk trial basis, call us and we'll tell you how. Call 1-800-387-5707 or you can buy IPS from your favorite software retailer.

Now Available For Your IBM PC, PC-compatible, Atari ST and MACINTOSH

New Enhanced IBM Version 1.21 Now Available!

Update your disks for only $10.00* with the return of your original disks.



• BATTERIES INCLUDED, an ITM company, 30 Mural Street, Richmond Hill, Ontario, Canada, L4B 1B5. (416) 881-9941, Customer Information (416) 881-9816
• If you can't find this product at your local retailer, you may order it direct from us at the full suggested list price plus $5.00 for postage and handling. For product orders please call 1-800-387-5707 (U.S. only). • With all Batteries Included products you can have the latest version update of your program by returning the original disk and $10.00. • Write to us for our full color catalog of products for the APPLE, APPLE MACINTOSH, ATARI, ATARI ST, COMMODORE, COMMODORE AMIGA, and IBM SYSTEMS.



CIRCLE 067 ON READER SERVICE CARD